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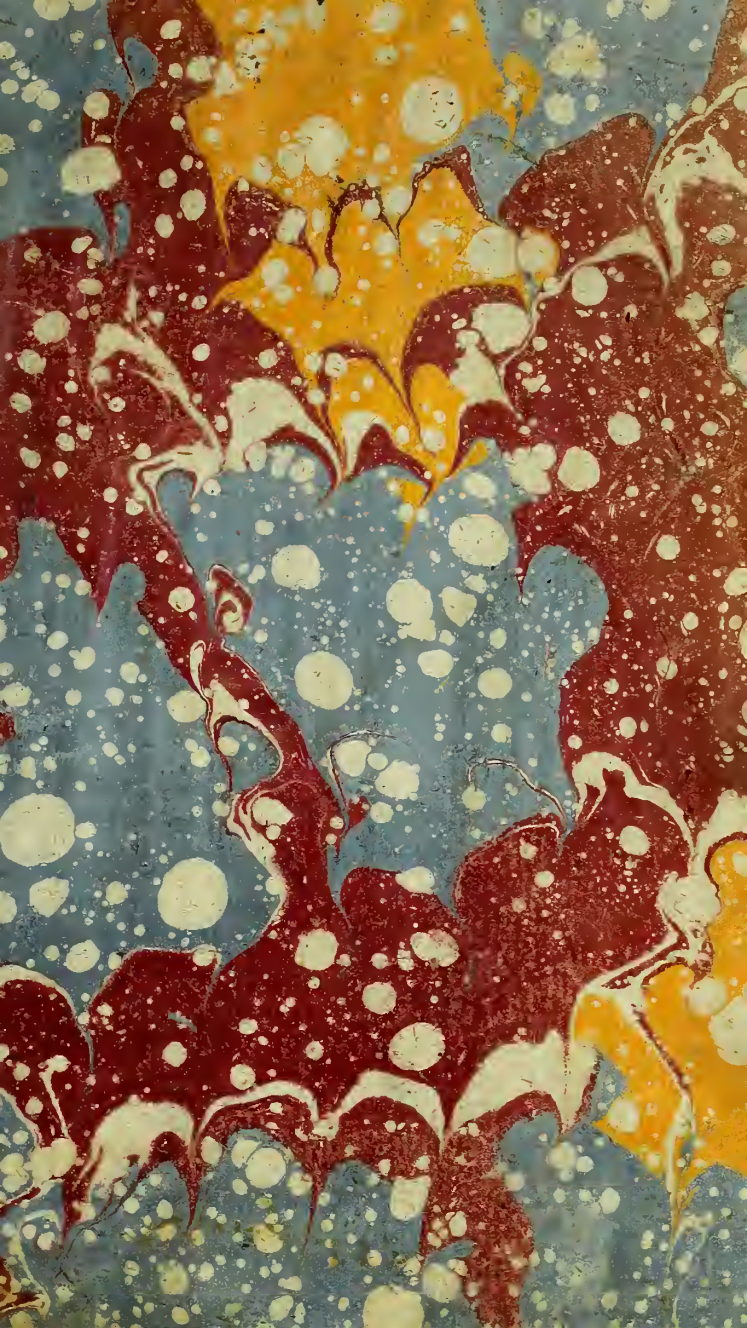

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Thomas Burwell Præses.
Samuel Collins,
Fr. Slare,
William Dawes,
Tancred Robinson,
} Censores.

MYOTOMIA REFORMATA:

OR,

A New Administration

OF ALL THE

MUSCLES

OF

Humane Bodies;

WHEREIN

The true Uses of the Muscles are Explained, the Errors of former Anatomists concerning Them Confuted, and several *Muscles* not hitherto taken notice of Described;

To which are subjoin'd,

A Graphical Description of the Bones; And other Anatomical Observations.

Illustrated with Figures after the Life.

By WILLIAM COWPER *Surgeon.*

LONDON,
Printed for *Sam. Smith* and *Ben. Walford* at the *Prince's-Arms* in *St. Paul's Church-Yard.*
MDCXCIV.

Cowper

Viris Expertissimis

ROGERO KNOWLES

Magistro,

Reliquisque *Gubernatoribus Societatis Chirurgorum Londinensium,*

NEC NON

Doctissimis Ornatissimisque D.D^bus

EDVARDO BROWN,

ATQUE

EDVARDO TYSON,

Coll. Regal. Med. Lond. Sociis,

ATQUE

Anatomiæ Prælectoribus in *Anphitheatro Celeberrimæ Societatis Chirurgorum,*

MYOTOMIAM.

Hanc Obsevantiæ ergo D.D.D.

GUILIELMUS COWPER.

THE

PREFACE.

IN the Contemplation of NATURE, we meet with nothing that affords us A more Invincible Argument of the WISDOM of the DIVINE ARCHITECT, than the Structure and Compoſition of ANIMAL BODIES, nor are the effects of that INFINITE UNDERSTANDING more viſible in any parts of an Animal Body, *than in the INSTRUMENTS of VOLUNTARY MOTION, whoſe Variety and Contrivances are both Admirable.*

In this reſpect ANATOMICAL DISQUISITIONS are exceeding-

ly entertaining; but beſides it behooves PHILOSOPHERS who inquire into the Nature of Things, and PHYSICIANS eſpecially, whoſe province it is to preſerve the CURIOUS FABRIC of the HUMAN BODY, to acquaint Themſelves fully with the Nature and Conſtitution of that NOBLE SUBJECT; for that is the only way to learn what are the Secret Springs by which the Myſterious Operations of SENSE and MOTION are performed, to diſcover the CAUSES and SEATS of DISEASES, and their SYMPTOMS, and the proper Methods of CURING and PREVENTING them.

What Opinion the moſt Judicious and Beſt of Men had of Enquiries of this Nature, even in their Infancy, we may learn from our Great Maſter HIPPOCRATES,

CRATES, *who was sent for to* DEMOCRITUS *the* Founder *of the* Mechanical Philosophy, *to cure Him of his supposed Madness, and finding Him Dissecting the* Bodies of Animals *to discover the seat of the* Bile, *and assign the reasons of its Effects, was so far from looking upon Him to be Mad, that He pronounced Him the* Wisest Man in his Country.

Nor is the Story that is told of our Modern Philosopher DES CARTES *less remarkable, who shew'd a Gentleman that came to see his* Library, *nothing but a* Calf *which he design'd to* Dissect.

But it is needless at this time to Enlarge either upon the Usefulness of ANATOMY in general, or the particular Advantages of an Exact Knowledge of MYOLOGY

LOGY in order to the PRACTICE of CHIRURGERY, and therefore I shall wave what might be said upon those Heads, and only give a short History of the Advancements that have been made in MUSCULAR ANATOMY in several Ages, and the Reasons why I undertook to Write upon that Subject.

Without doubt HIPPOCRATES *was well skill'd in ANATOMY, as it appears by his Books* De Glandulis, De Fracturis, *&c.*

ARISTOTLE *Dissected many* Animals *before He began to Compose their History, of which we have only a few Fragments.*

RUFFUS EPHESIUS *had also made some Progress herein, and gave the External parts their proper Names.*

GA-

GALEN *and the* Anatomists *of his time were indefatigable in their* Anatomical Labours, *as appears not only from those Excellent Books of his* Of Anatomical Administration, *and* Of the Use of Parts ; *but in that Compendious System of the* Muscles *collected out of Them by* ORIBASIUS : *Before and after whom we find no considerable progress made in ANATOMY, till the Rise of the Accurate* Jacobus Sylvius, *and* Andreas Vesalius, *about the middle of the last Century.*

There have been indeed divers Others who have Written of ANATOMY, as Alcmæus Crotoniata, Diocles Carystius, Erasistratus, *and* Herophilus, *of which the two Latter are said to have Taught ANATOMY Publickly, and to have Dissected many Hundreds*

dreds of Human Bodies in Greece, Syria, *and* Ægypt: GALEN *was a Disciple of the last; but we have none of their* Writings *now extant. Besides These there are Others mentioned by* Galen, *as* Lycus, Quintus *who was* Lycus's *Master, and* Marianus, *but we shall not repeat their Names, since their Observations afford Us no occasion to mention them hereafter.*

Amongst the many ARABIANS *that have Written on this Subject,* Avicenna *is esteemed the Chief; and amongst the Ancient* LATINES, Mundinus *is reckon'd the First; whose* Works *are Commented on by* Jacobus Berengarius Carpensis, *and* Curtius; *but neither of these furnish Us with any discoveries in* Myology.

THOMAS DE ZERBIS *is also*

also mentioned, but his Writings are supposed to be Collected from the Observations of Others.

NICOLAUS MASSA *a* Physician *of* Venice, *is reputed A Benefactor to* Anatomy, *and mentioned by* * Riolan *to have first Observ'd the* Musculi Pyramidales *described by* Falloppius.

* *Anthropog. Lib.* ii. *Cap.* viii.

CAROLUS STEPHANUS *assisted by the Industrious Hand of* STEPHEN RIVERIUS *a CHIRURGEON,* (*as* Riolan *Writes*) *was a Diligent Improver of this Art, and Illustrated it with* Figures *before* Vesalius; *but we were never so fortunate as to see either of these Three last mentioned.*

JACOBUS SYLVIUS *was an* Accurate Anatomist *of his time; He Wrote an Admirable* Commentary on Galen's Book of the Bones, *and an Answer to the*

the Calumnies of Veſalius, *whom He calls* Veſanus : *After his Death was Publiſhed that Incomparable Piece Intituled,* Iſagoge Anatomica, *wherein He digeſted the MUSCLES and* Veſſels *into order, which were Treated of confuſedly before by* Galen, Veſalius, Columbus, *and* Falloppius, *and gave Them their NOMENCLATURE ſtill Uſed by ANATOMISTS.*

Before Sylvius, *or at the ſame time,* FERNELIUS, *and* JOHANNES GUINTERUS ANDERNACUS, *were Contemporaries ; but neither of Them have made any Improvements in the Knowledge of the MUSCLES.*

ANDREAS VESALIUS *began very young to examine the Parts of ſeveral Animals, in which Study by a Wonderful Sagacity and peculiarity of* Genius,

nius, *he made a swift but Steddy Progress*; *He was* * *Scholar to* Guinterus, *as himself confesseth in his* Institution Anatom. ac Lib. de Veteri & Nova Medicina; *and a Disciple to* Sylvius, *as He acknowledges in the PREFACE to his first Impression,* De Fabrica Humani Corporis, *Printed in the year* 1543, *which passage is left out in the second Published in the year* 1555. *And here it may not be amiss to take notice by the by of another difference between these two Editions, to wit, that the Figures of the Former are much finer, but the Descriptions are more Correct in the Latter.*

Indeed much is owing to this Great Man, whose Accounts of the MUSCLES as well as all other Parts that were known to Him, are generally very faithfully

fully delivered. He was Contemporary with REALDUS COLUMBUS, GABRIEL FALLOPPIUS, VALVERDA, *and* BARTHOLOMÆUS EUSTACHIUS, *all excellent* Anatomists, *especially the Two Former, the First of which and* CÆSALPINUS *started early hints of Their Knowledge of the* CIRCULATION of the BLOUD; *which perhaps for some Reasons* They *afterwards concealed.* Falloppius *was a most Accurate Dissector of the MUSCLES, as will appear in the following* Tract, *and his Ingenuity in acknowledging what He took from* Vesalius *is very Commendable.*

From THESE the MYOLOGY has received its greatest Improvements; and though there are divers others that have Written on this Subject, yet none except

cept HIERONYMUS FABRICIUS ab AQUAPENDENTE, *and* JULIUS CASSERIUS PLACENTINUS, *have given any true Marks of their knowledge herein.*

Both the RIOLAN's *pretenſions are great, but we Trace Them in* Falloppius.

There are divers Others in Repute with the Vulgar for their Deſcriptions of the Muſcles, *amongſt which* SPIGELIUS *is the chief, but there ſeems to be nothing extraordinary in his Book beſides the Figures of* Jul. Caſſerius Placentinus, *ſome of which are very Imperfect. Since our laſt named* Author *there has been nothing diſcover'd in MYOTOMY except* M. DU VERNY's *Oblique Muſcle of the Ear.*

The Sculptures of BIDLOO *are not to be forgotten, ſince they*

Expreſs divers MUSCLES *and other Parts ſo near the Life.*

The many that have lately written on this Subject have rather increaſ'd than diminiſhed the Errors, eſpecially thoſe that Write in ENGLISH, *and particularly that Treatiſe of Mr.* WILLIAM MOLINS, *and that moſt Erroneous one of* JOHN BROWN, *are only Collections of the Miſtakes of others.*

Indeed the greateſt part of Books now Extant are mere Copies, *or Extracts, and Uſeleſs Rhapſodies*; ORIGINALS *are few and Rare*; *MANKIND finding it much eaſier to Tranſcribe and Steal, than to Invent and Improve, though NATURE affords an Unexhauſtible and yet hidden Treaſure, ſufficient to employ the ſearch and Induſtry of all the HANDS and WITS in the*

the World. One great Miſtake has much Obſtructed the Advancement of true Knowledge, and that is a general opinion the Senſes are Groſs and Ignoble, and that Abſtracted Contemplations are the perfections of Human Nature; and ſo it comes to paſs that MAN is fed and pleaſed with Chimera's and Shadows, inſtead of true ſubſtantial Knowledge, which is to be learnt by true Phyſical Examinations of Senſe and Experiment, by Enquiry and Obſervation.

Thus, after repeated DISSECTIONS, finding the Errors of the Latter Writers of MYOLOGY to equal, if not exceed thoſe of the more Ancient AUTHORS; I was induced to think that a Reformation of ſo conſiderable as well as Uſeful a Part of ANATOMY, would not be

altogether Ungrateful to the Publick at this Time. Neither did I entertain such a design without foreseeing it would meet with its Enemies, some of which I am Confident will disapprove of the Undertaking meerly for the sake of the Undertaker.

I did at first, I must confess, only design the Publication of my own Observations and Discoveries made in DISSECTION of the MUSCLES, but considering the Confusion Authors make, and the Multitude of Mistakes with which the Books of this kind for the most part are fill'd; I conceived it might prove a Work of more general Use to give their entire History; VVherein, according to my ability, I have rectified their Descriptions, supplied the Defects, and retrenched the Errors of Others, and done

Justice

Justice to every Man by whom I have been assisted.

I have by way of INTRODUCTION premised my Conjectures concerning the Composition of a MUSCLE, and its Contraction for the convenience of Those who are not acquainted with the Ordinary Doctrine; which I hope the Learned Reader *will excuse. For the same Reason it seem'd advisable to add the* Administration of their Dissection *in imitation of* Galen, Vesalius, *and Others; whereby the* Learner *may at once be Inform'd not only of what is in NATURE, but of the manner of discovering it. These RULES are Inserted in a different Character preceding to the Descriptions, and there more especially where any difficulty may arise to the Unacquainted OPERATOR. And to render what*

my

my particular Enquiries have given me occaſion to Obſerve more ſerviceable, thoſe MUSCLES here deſcribed which have eſcaped the Obſervations of Others are not only Delineated, but Thoſe *alſo that have not hitherto been well expreſt by the Figures of* Veſalius, Julius Caſſerius, *(which are annext to the Works of* Spigelius) *and thoſe of* Bidloo, *and ſome others; To which Authors, References are placed in the Right hand Margin at the Beginning of the Deſcription of each MUSCLE, that the* Reader *may know where to find it Figured.*

Laſtly, to compleat my Deſign, and to render this Account ſtill more Intelligible, I have added Two Figures of the SCELETON, to which References are made in the Text by Numbers anſwering,

or ſubſequent to the Numbers placed upon the Figures Cited in the Left hand Margin; To the end the whole (which are my moſt Hearty Wiſhes) may be of more Uſe and Service to the Publick.

THE

THE INTRODUCTION:

CONTAINING

A Description of a Muscle.

A MULCLE is the chief and Immediate Instrument of Spontanious Motion: It's called by the *Greeks* μῦς, either from the resemblance divers of *Them* have to a Flead Mouse, or to the Shell Fish called *Musculus*, or from μυειν to Contract. Under this denomination of *Muscles* is comprehended all that which is called Flesh, which is not one continued Mass, but is distinguished into divers Portions, lying contiguous to each other, in such decent Order as conduces as well to an Elegant Symmetry of the whole Body, as to the Execution of each Muscles particular Office.

A *Muscle* is composed of *Membranes*, *Tendon*, *Arteries*, *Veins*, *Nerves*, to which some add *Lymphe-ducts* and *Fat*. Of *These* the two first are esteemed *Proper Parts* of *It*, the rest are

counted *Common:* As to their Origin, whether any of the Former are derived from the Latter, or whether by an admirable Stenography of Nature they were all delineated in the *Ovum* of the Female, or *Semen* of the Male, or partly in both before the Impregnation, shall not be our Task at present to consider: But we shall briefly enquire into the Intimate Structure of a *Muscle*, as it appears in an Adult Body.

A *Muscle* is commonly distinguished into three parts, *viz.* the Head, Belly, and Tail: The Head or Beginning is as it were the Center of its Motion, fixt to the most Stable Part; its Middle or part most Tumid is called its Belly; and its other Extream Implanted in the Part moved is Denominated its Tail or Ending.

The *Common Integument* of Muscles first offers it self to view after the Skin and Adipose Membranes are removed. *This* is frequently Complicated with the Tendons of Muscles, especially where Stricter Inclosures are necessary, as on the Muscles of the *Cubit*, and those of the Thigh and *Tibia*; the Uses of Which we have Demonstrated, *Chap.* XXVI.

The *Proper Membrane* of a Muscle does immediately Inclose *It*, and is frequently conjoined with the Former, especially on those Parts last mentioned, where it's complicated

cated with Tendinous Expansions, that it becomes inseparable from it: *This* not only involves each Muscle, but distinctly incloseth each *Fasciculus* of its Fleshy Fibres, as is evident in the *Glutæi Maximi Deltoides, &c.* And these *Fasciculi* of Fleshy Fibres are in a peculiar manner assisted by *These* their proper Inclosures, as the Muscles of the *Cubit* are by the *Fascia lata, Whose* Office I have elsewhere endeavoured to Explain.

In the Interstices of these *Fasciculi* in Robust Bodies we frequently find Fat, which, by the assistance of an ordinary *Microscope*, appears composed of certain Transparent Membranous Cells distended with an Oily Matter; which plainly discovered it self to the Naked Eye of that Inquisitive Anatomist, Dr. *Tyson*, in the Dissection of a *Porpes.* These Adipose Cells are furnished with Bloud Vessels, as was sufficiently demonstrated in an Experiment I lately made by Injecting of *Mercury* into the Artery of the Arm. The Use of the Fat, according to the Ingenious Dr. *Havers* in his *Osteologia Nova, pag.* 209. is to be join'd with the Muscilage separated from the Neighbouring Glandules, and help to make up a Composition to preserve the Tendinous and Fleshy Fibres from growing Dry and Rigid, and to Lubricate them, and render them fit for Action.

The *Tendon* of each Muſcle is eithe partly united, or partly divided, or totally divided; if united it's meerly Tendinous, if divided it's eſteem'd Fleſhy, wherefore it's ſaid to conſiſt of Tendinous and Fleſhy Fibres, or Fleſhy Fibres only: Thoſe parts of Them entirely Tendinous are a Compages of Filaments compactly joined without the apparent Interpoſition of other Parts, as Bloud Veſſels, Nerves, *&c.* The Fleſhy Fibres are continuous with the Former, and are furniſhed with Bloud Veſſels, Nerves, and Lymphe-ducts: *Theſe* are divided into divers *Faſciculi* of a *Priſmatical* form, *Hexagon*, *Square*, or *Triangular*; each *Faſciculus* is compoſed of divers Tendinous Filaments which lie Parallel to each other. Though by the diſruption of theſe *Priſmes* divers oblique *Interfibrillæ* appear (which not unlikely gave occaſion to *Steno* to imagine them of a Rhomboidal Conſtructure) yet by the aſſiſtance of the *Microſcope* They alſo appear no otherwiſe than parts of the divided *Faſciculus*; that appearance of *Them* being partly cauſed by their agglutination to each other, and partly by the diſtribution of the Bloud Veſſels and Nerves paſſing to each *Fibrilla*; which Interſecting each other, I am apt to think, might impoſe on *Borellus*, and make Him conceive theſe *Fibrillæ* to be Compoſed of

of many Links of a *Rhomboidal* or Lozenge Figure. Each of these *Fibrillæ* are much smaller than the finest Hair, Their Figure is Cylindrical, their Internal substance is porous like a Hair, with this difference, to wit, the Pores of That are more numerous and less, and in This the Pores are larger and fewer; which we shall have occasion to mention in examining the Distribution of the Bloud Vessels.

The *Nerves* accompany the Bloud Vessels at their Ingress into *Muscles*, and are distributed to all their Carnous Fibres: some have thought the *Head* of the *Muscle* to be the place of their Insertions, but that opinion has been long since exploded, it being evident that divers *Muscles* receive two or three Branches of *Nerves* in differing parts of *Them*. How the Extremities of *Nerves* Terminate in These and other Parts, is still likely to be a secret in Nature, since neither the Naked Eye, or any *Microscopes* yet known, are capable of rendering it a matter of Autopsie. The examination of *Nerves* by the *Microscope* doth sufficiently inform us, that nothing that has been said of them hitherto is less probable, than that They are employed in conveying any Part of the *Succus Nutritius* to other parts, which some have so grosly dream't of. 'Tis true that an *Atro-*

phea of Parts will follow upon the abſciſſion or relaxation of their *Nerves*; but if we conſider what alteration muſt inevitably happen in the *Tone* of thoſe Parts, whoſe *Nerves* are divided or relaxed, we ſhould not be much at a loſs in aſſigning a Cauſe for that *Phænomenon*. That the Trunks of *Nerves* are compoſed of divers *Faſciculi* of *Fibrillæ* lying parallel to each other, is what ocular demonſtration evinceth; but by the help of our Glaſſes thoſe *Fibrillæ*, which before ſcarcely appeared to Us, will diſcover themſelves to be ſtill made up of divers *Others*; and all of *Them* full of Pores; And if by chance you diſcover a ſingle *Fibrilla*, as I have ſometimes done, you will find its ſubſtance porous; but (if I may be allowed to calculate its dimenſions by the ſame *Microſcope*) it does not ſeem to exceed the Hundredth part of a Hair: Its contents in thoſe curious fine Cells or Pores muſt neceſſarily be very ſubtil; nor will I contend with thoſe who will call them *Animal Spirits*, or an Aerial Body, ſuch as the *Materia Primi*, or *Secundi Elementi*, of *Des Cartes*, nor ſhall I concern my ſelf with an account of the Tranſmiſſion or derivation of this ſubtile matter from the Great Fountains, whether of the Brain or Bloud Veſſels, paſſing immediately between the *Nervous Faſciculi*,

ſince

ſince I hear my Ingenious Friend Dr. *Ridly*, will Publiſh his Accurate *Anatomical Lectures* lately Read in the *Amphitheatre of the Colledge of Phyſicians*, wherein He has touched on this particular.

The *Bloud Veſſels* of each *Muſcle*, like thoſe of other Parts, are *Arteries* and *Veins*, of which the former import Bloud into it, and the latter convey it back again to the Heart. How *Theſe* tranſmit their contents to each other, has been a Controverſie among Anatomiſts, till the Induſtrious *Leewenhoek*, by the Aſſiſtance of his *Microſcope*, diſcovered thoſe Veſſels in the Tranſparent *Fimbriæ* of the Tail of an Eele, or *Lacerta aquatica*, to be continued Channels, without the interpoſition of any Spongious Body, which Anatomiſts had ſo long imagined, which pleaſing *Phænomenon*, is commonly demonſtrated by thoſe Improv'd *Microſcopes* made by Mr. * *Mellang*, that 'tis needleſs to ſay more of it in this place: Wherefore I ſhall proceed to relate what offer'd it ſelf in an Experiment I lately made, by Injecting *Mercury* into the great Artery of the Arm, which not only prov'd what *Borellus* had obſerv'd, that even the Fleſhy Fibres of *Muſcles* are in themſelves white, and that their red Tincture is from Bloud, but was an Intimation of a peculiar

* *Living in* Abchurch lane.

Conformation of the Extremities of the Bloud Veſſels, which were filled as full with *Mercury* as they could be before with Bloud; and afterwards, in examining the *Fibrillæ*, I found their Cells before-mention'd fill'd with the *Mercury*. Theſe Cells, by what I have as yet obſerv'd, do not communicate with each other, but as I have ſome reaſons to conceive, there are certain *Foramina* in the ſides of the Arteries that open into *Them*. Each Globule of *Mercury* in the *Fibrillæ* appear'd to be almoſt as big as two or three Globules of the Bloud: Hence it may be accounted how the Intumeſcence of theſe Parts happens by often injecting Water by the Arteries in dead Animals; That being a Body whoſe parts are very apt to inſinuate themſelves, *qua da tur Porta*, theſe Cells become diſtended by it. Hence alſo an account may be given how *Muſcles* are excited to act by ſuch Injections made ſoon after the Death of the Animal; but of this hereafter.

Theſe Contemplations compared with ſome Experiments I afterwards made, did almoſt tempt me to form an *Hypotheſis* of the *Contraction of a Muſcle*; but reflecting on the various Conjectures of ſo many Learned Writers, who had already employ'd themſelves on this Subject, I found it would prove a Work of more time to refute what has

has already been propoſed, and corroborate my Conjectures with repeated Experiments, than I had allotted my ſelf for that purpoſe.

The former Anatomiſts being unacquainted with the Intimate ſtructure of a *Muſcle*, and Uſe of the Parts which compoſe it, placed the power of Contraction in its Nerves, or in its carnous Fibres only.

The Accurate *Steno* conceiving the Fleſhy Fibres, and oppoſite Tendons of Muſcles, to bear an Analogy in their Conſtructure to *Parallelograms*, imagines that an alteration of the Angles of their *Areæ* may be made by extenſion only of its Fleſhy Fibres; and this He ſuppoſed may be done without the Acceſſion of new Matter.

Dr. *Willis* pretends that the *Animal Spirits* brought by the *Nerves*, are lodged in the *Tendons* of *Muſcles*, which joining with other Particles of an Active Nature, ſupply'd from the Bloud, make an efferveſcence, by which the Carnous Fibres are exagitated, which being Lax and Porous, are ſtuft, and become Corrugated; hence he ſuppoſes the whole Muſcle is alſo Contracted.

Dr. *Mayow* imagines the Contraction of a Muſcle may be made by an efferveſcence ariſing from the Commixture of *Sulphureo-ſaline* Particles, ſecreated from the Maſs of Bloud, and Nitro-aerious ones tranſmitted by the Nerves.

M.

M. Du Verny Conjectures an Intumeſcence may be made in the Carnous Fibres of Muſcles without a Ferment, ſuppoſing (like Dr. *Willis*) that the Tendons are Store-houſes of Spirits which are excited by new ones from the Brain, and thoſe, together with a Juice ſupplied by the Arteries, Extend the Fleſhy Fibres, like a Fiddle-ſtring expoſed in a Moiſt Air.

Dr. *Croon* ſuppoſes each diſtinct Carnous Fibres to conſiſt of an Infinite number of ſmall Globules or little Bladders opening into one another, and that the Nouriſhing Juice conveyed at large among the Carnous Fibres through the Artery, by the conſtant pulſe of the Heart is driven on, and after mixing with another Liquor between thoſe Fibres, paſſes into the Cavity of each Globule or Bladder, where it mixes with a ſecond ſort of Matter more Active than the Former, and by Theſe conſtant agitations, ebullition, and efferveſcence, with the Natural Heat; He imagines is partly the cauſe, and partly the conſtant aſſiſter of the Motion of a Muſcle. *Vid. Hook's Philoſophical Collect. N.* 2. *p.* 22.

Joh. Alphonſus Borellus enlightened with Mechanical Demonſtrations, after an enquiry into the intimate Structure of a Muſcle, conceives its Fibres to be compoſed of a Chain

Chain of divers *Rhombi* or *Lozenges*, whoſe *Areæ* may be enlarged or diminiſhed by the Acceſſion or Retroceſſion of Bodies, inſinuating themſelves like ſo many Wedges into it; and theſe He thinks are a Nervous Juice inſtill'd *ad Imperium Animæ*, joining with the Bloud or Lymphe, whence an Ebullition or Fermentation does Ariſe.

The Experiments I have made, compar'd with that above mentioned (by Injecting Mercury) ſeem to intimate, that the Bloud, barely as a Fluid, is an Aſſiſtant in the Contraction of a *Muſcle*: and this did not only appear by making a Ligature on the Deſcending Trunck of the *Aorta* of a living Animal, whereby all the Inferior Parts become Deſtitute of Motion, which they again recovered by looſing that Ligature, and admitting the Bloud to flow again into the Muſcles; But even after the ceſſation of motion in the ſame Animal it was ſurpriſing to Obſerve the Muſcles of the Legs renew their Contractions, upon the injection of Water only into the Crural Artery; which Experiment I have frequently repeated with the like ſucceſs.

Hence I began to ſuſpect, that the Bloud is the *Pondus* by which the *Action* of a *Muſcle* is perform'd; and that either by a Turgeſcence began in the *Parietes* of the Cells

of

of the Fleshy Fibres caused by the contents of the *Nerves* Agitated *ad Imperium Animæ*, or by Constriction of the Venous Duct, may be the immediate cause of Replietion of the Cells, whereby the length of their *Fibrilla* is lessened: And this Opinion I could rather entertain, because it seems to Quadrate with that of [a] *Borelle*'s, and the late Ingenious Dr. [*] *Croon*, to whose farther Explications I refer the Inquisitive Reader.

[a] *De Motu Animal.*
[*] *M.* Hooks *Philos. Collect. Numb.* 2.

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Books

Books Printed for *Samuel Smith* and *Benjamin Walford*, at the Prince's Arms in St. *Paul's-Church-Yard.*

MArtini Liſter M. D. & S. R. S. Exercitatio Anatomica de Cochleis maximè Terreſtribus, Limacibusque, quarum Diſſectiones Tabulis æneis ad ipſas res affabrè incisis, Illuſtrantur. Interſeritur Digreſſio de Reſpiratione. 8°.

Pharmacologia, ſeu manuductio ad materiam medicam, in qua medicamenta officinalia Simplicia; hoc eſt, mineralia, vegetabilia, Animalia, eorumque partes in medicina officinis uſitata, in methodum naturalem digeſta, ſuccinctè, & accuratè, deſcribuntur: cum notis generum Characteriſticis, Specierum Synonymis, differentiis, & viribus. Opus omnibus Medicis, Philoſophis, Pharmacopeis, Chirurgis, & Pharmacopolis utiliſſimum. A Samuel Dale in 12°

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MYOTOMIA REFORMATA:

Or,

A New Adminiſtration of all the

MUSCLES

OF

Human Bodies, &c.

CHAP. I.

Of the Muſcles of the Abdomen.

IN the regular Adminiſtration of a Human Body, we muſt begin our Section with the Lower Belly, leaſt the ſpeedy Putrefaction of its *Viſcera* ſhould become troubleſome and offenſive: For this purpoſe, Inciſion muſt be made through the common Integaments of the Body, in a Crucial

Form. The firſt and direct Line of Diviſion beginning at the *Cartilago Enſiformis* (32), muſt be continued to the *Os Pubis* (38). The other Tranſverſe from the Navel on each ſide to the Region of the Loins, after which, the Skin, Fat, and Membranes, of each Portion being raiſed from their reſpective Angles, the Muſcles, which cover the *Abdomen*, will appear in their proper Situation. Theſe may be comprehended under the general Title of *Epigaſtrick*, whereof ſome are Anteriour, ſeated in the Fore-part only, ſome Lateral, others Poſteriour, beſt referred to the Back and Loins. In their particular Enumeration and Deſcription we ſhall conſtantly obſerve the Method we propoſed to our ſelves, and Treat of them according to the Order that they appear in Diſſection. *Fig.* xvii

Firſt then, *Obliquus Deſcendens ſeu Declivis.*

Veſalius prima Muſculorum Tabula PP.

This Muſcle derives its Name from the Progreſs of its Fibres. It ariſes with ſeveral acute Productions, partly Fleſhy, and partly Tendinous, from the lower Margin of the fifth (*n*), ſixth (*o*), ſeventh,

seventh (*p*), and eighth Ribs (*q*), where its several seperate Originations lie between the Indentations of the *Serratus Major Anticus*; These for better Distinction we chuse to call its former Origin; besides which it continues to derive more heads in like manner from the ninth (*r*), tenth (*s*), and eleventh (*t*), and sometimes from the extremity of the last Bastard Rib (*u*), where it is also indented with the *Serratus Inferior Posticus*, as *Vesalius* has well observ'd: From its former Origin, its oblique descending Fleshy part expands it self into a broad Membranous Tendon, before it marches over the *Rectus* to its Insertion in the *Linea Alba* and *Os Pubis* (38): From its latter in the same manner descending it ends partly Tendinous in the *Ligamentum Pubis*; but chiefly Fleshy on the superiour and forepart of the circular edge of the *Os Ilium* (36). It adheres not to the Transverse Processes of the *Vertebræ Lumbares*, as *Spigelius*, *Vesingius*, and with them most Anatomists have imagined. But its largest, last, and most Fleshy Digitation, leaving the lowest Bastard Rib at its extream Point, and in its oblique Descent declining

Fig. xvii.

Fig. xvii.

Fig. xvii.

Human. Corp. Tab. Lib. II. *Cap.* XXI.

Human. Corp. Fab. Lib. IV. *Cap.* X. *Syntagma Anatomica. Cap.* II.

clining forwards, ſtill recedes gradually more and more from the *Vertebræ* (34), forming a Triangular Interſtice, comprehended by the *Sacrolumbus*, *Os Ilium* (36), and its lower ſide; in which *Area* the Fibres of the ſubjacent Muſcle plainly appear. *Fig.* xvii

Beſides the Actions vulgarly aſcribed to this Muſcle, and its Partner, together with the reſt of their Fellows, *viz.* Compreſſing the Inteſtines and Bladder either in excluding the *Fæces* and Urine in both Sexes, or *Fætus* in Women; They have ſtill a farther and more Noble Uſe. That part of either of them that is interjacent between their latter Origin and Spine of the *Os Ilium* (37), bearing an Analogy in its poſition to the *Maſtoideus* of the Head, (of which hereafter) ſerves for the Circumrotation of the Trunk upon the *Axis* of the *Vertebræ*, when we convert the Body to the contrary ſide, the Feet remaining unmov'd, for which neceſſary Motion Authors have aſſign'd no Inſtrument, though this I think did not eſcape Dr. *Gliſſon*'s Judicious Reflection.

De Ventricul. & Inteſtinis.

For

For the better Diſſection of theſe Abdominal Muſcles, obſerve the following Method. The Body being ſupported on its ſide, the Dorſi Latiſſimus *of the contrary muſt be Freed from its divers Fleſhy Originations at the Curvated parts of the Ribs, as alſo the Tendinous part of it, which Ariſes from the edge of the* Os Ilium: *This done, the Blood being dried, and the Fat cleared, which caution (to prevent Confuſion) muſt perpetually be obſerved, the Originations of the deſcribed* Obliquus Deſcendens *will appear.*

Begin its Separation by Introducing your Fore Finger between it and the following Muſcle in the above noted Interſtice, then Raiſe that Part of it which Springs from the Loweſt Rib, and Terminates in the Spine of the Os Ilium, *proceeding to Free the reſt of its Digitations from between the four above-named* Serrati, *being cautious not to wound its Tendon in dividing it from its ſubjacent Muſcle, eſpecially as it marches over the* Rectus. *Nor may their Separation be attempted in every Subject by reaſon of their ſtrict Adheſion; wherefore in preparing theſe Muſcles when they are to be Demonſtrated after Diſſection, you may proceed in the following Order.*

The Obliquus Deſcendens *being Rais'd on either ſide (as before) to the* Rectus, *cut through and Raiſe both Tendons together, leaving them at their Inſertions in the* Linea Alba, *taking ſufficient care in their Separation from the Interſections of the* Rectus. *This done, on the contrary ſide Raiſe its Fleſhy part only, beginning in the* Linea Semilunaris, *by making an Aperture in its Tendon towards its Lower part, where it is ſeparable from that of the following Muſcle, thruſting a Probe between the Two Tendons, divide this Superiour one through the length of the* Abdomen. *Then, the Fleſhy part on this ſide being alſo Rais'd, and clear'd to the Extremities of its Digitations and left there: Raiſe the oblique Aſcendent; and on the ſame ſide you Rais'd the former towards its Origination, Raiſe this* E Contrario, *ſo purſuing it to the* Linea Alba, *where it is to be left: On the contrary ſide, its Fleſhy Portion muſt be Rais'd to its Origination. The reſt of theſe Muſcles appearing in* ſitu *require no Diſſection.*

Obliquus

Obliquus Ascendens seu Acclivis.

pigel. ab. 10. ib. 4. .L.

So called from the oblique Ascent of its Fibres, the same Error noted in the preceding Description is likewise here committed by Vulgar Anatomists. Neither of these Muscles having any Communication with the Lumbal *Vertebræ*. It arises Fleshy from the whole circular edge of the *Os Ilium* (37), and *Ligamentum Pubis*, without any Thin Membrane springing either from the Loins, or *Os Sacrum*, as *Vesalius* would persuade us, or from the *Apices* of their Transverse Processes, as others pretend, thence mounting with an order of Fibres inclining Forwards, Forms a Broad Membranous Thin Tendon, Implanted into the whole length of the *Linea Alba*, and the Cartilages of the eighth (*q*), ninth (*r*), tenth (*s*), eleventh (*t*), and twelfth Ribs (*u*).

Fig. xvii.

Human Corp. Fab. Lib. II. XXXI.

Fig. xvii.

Besides its known Use in compressing the *Abdomen* and its Contents, that part of it which arises Fleshy towards the back part of the edge of the *Os Ilium*, by the oblique Ascent of its Fibres, to the Cartilaginious

Endings of the Ribs, not only Depreſſes them and ſtreightens the Cavity of the *Thorax* in Expiration, but in regard the Order of Fibres of this Interſect thoſe of the Former Muſcle, on the ſame ſide may Antagoniſe it in the Circumrotation of the Trunk of the Body on the *Axis* of the *Vertebræ*; as on its contrary ſide, its ſeries of Fleſhy Fibres being parallel to thoſe of the ſaid *Deſcendens*, on the oppoſite ſide may Act in Concurrence with it in diſcharge of its Office. In the Structure and Reciprocal Co-operation of theſe Muſcles, the Aſcending on the Right, and the Deſcending of the Left, Turning the Body to the Right, and *Vice Verſa*. The Aſcending in the Left and Deſcending in the Right in like manner Turning it to the Left, the Art of Nature indeed is very admirable.

Pyramidalis vel Succenturiatus.

Bidloo T. 32 2. This Muſcle lying on the *Rectus* preſents it ſelf next in order of Diſſection. It has its Name from its Figure aptly repreſenting a Pyramid from a broad *Baſis* ending in a Point. It

Ariſes

Ariſes from the ſuperior part of the *Os Pubis* (38), and in its Aſcent leſſens its ſelf gradually till it becomes a long Tendon inſerted in the Navel. *Riolan* has obſerved the left to be moſt commonly the leſſer, and if either be abſent, it moſt uſually is that; *Falloppius* (who firſt diſcovered theſe Muſcles) conjectures they compreſs the Bladder of Urin. *Fabritius ab Aquapendente* imagines they ſupport the *Abdomen*, and hinders the ſuperior parts from preſſing too violently on the inferior; but this Opinion ſeems to take its riſe from obſerving the Anatomical ſubject in a ſupine Poſition. The Uſe, which we think moſt genuine and natural is this. When the *Diaphragm* has preſt the *Viſcera*, whereby the *Abdomen* is become Tumid, then pull the Navel downwards, by which means they make a more adequate compreſſion of the Bladder in the expulſion of Urine, than any other Muſcle of this part; though it muſt be confeſt they all contribute their aſſiſtance in that Action. They are called *Succenturiati* by their Author, or Auxiliary Muſcles from a ſuppoſition that they are only ſupplemental to the

Fig. xvii.

Anthrop. lib. 5. cap. xxxiv.

Obſervat. Anatom.

Vid. *Anatom. Thom. Bartholin, lib.* 1. *cap.* vi.

fol-

following in their action, the order of Fibres in both agreeing, and theſe being always abſent, when thoſe are continued Fleſhy to the Juncture of the *Oſſa Pubis*.

*Bid.T.*32. MN.PP.

Rectus.

So called from the Rectitude of its Poſition. Anatomiſts differ in aſſigning the Origination of this Muſcle, ſome deriving it from the *Sternum*, others from the *Os Pubis*; but it ſeems a matter more of controverſie than uſe, ſince either part is indifferently moved by it, the oppoſite remaining ſtable. Little can be added to the common and well known deſcription of theſe Muſcles, they being contained according to the length of the Lower Belly from the *Cartilago Enſiformis* (32), and two of the Cartilages of the True, and two of the Baſtard Ribs down to the *Os Pubis* (38), and divided into four or five Portions by three or four Intermediate *Perigraphæ*, or Tranſverſe Tendinous Interſections. The Veſſels which paſs underneath its Upper part are the Mammary Artery Deſcending, and its Vein Aſcending.

Fig. xvii.

Thoſe

Thoſe of its Lower part are the *Epigaſtrick* Artery Aſcending, and its Vein Deſcending. The Incloſure of this Muſcle in the double Tendon of the *Aſcendens* we could never as yet diſcern, rather ſuſpecting that the Adheſion of the Aſcending Tendon to that of the following Muſcle in the *Linea Semilunaris* might occaſion the miſtake.

Veſ. Muſ. Tab. 5. Y.

Tranſverſalis.

So called becauſe its Fibres run tranſverſly over the *Abdomen*. This Muſcle does not Ariſe according to the Vulgar Tradition, from any Ligament, whither ſpringing from the *Os Sacrum*, or covering the *Sacrolumbus*, but, as *Realdus Columbus* truly writes, from the Tranſverſe Proceſſes of the Lumbal *Vertebræ* (34) Spine of the *Os Ilium* (37), *Ligamentum Pubis*, and Cartilaginious endings of the Ribs below the *Sternum*, from whence its Fleſhy part paſſes over the Convex Surface of the *Peritonæum*, and becomes a Broad expanded Tendon before it runs under the *Rectus* to its Implantation in the whole Longitude of the *Linea Alba*. When this Muſcle

De Re Anato, lib. 5. cap. xxii.

Fig. xvii.

Muſcle with its Partner Act, they Preſs the *Abdomen* directly inwards, as in Expiration. *Caſpar Bartholin* obſerves in Bulls and Animals of the larger ſize, that part of this Muſcle is continuous with the Diaphragm at the Cartilaginious endings of the Ribs below the *Sternum*; whence he ſuppoſes the *Diaphragma* to be a *Trigaſtrick* Muſcle. But whither this Obſervation will quadrate to a Human Body whoſe Poſture is Erect, and manner of Reſpiration different from that of *Quadrupeds*, we leave undecided till farther Enquiries afford us better Information. The Spermatick Veſſels paſs through this and the *Aſcendant* Muſcle near the *Inguina* in the Mid-way between the Forepart of the Spine of the *Os Ilium* and *Os Pubis*, whence deſcending for ſome ſpace between the Fleſhy part of the laſt named, and Tendon of the *Obliquus Deſcendens*, they run through a Fiſſure of the ſaid Tendon near the laſt named Bone. Theſe Perforations not exactly correſponding to each other, is an Artifice in Nature to prevent a *Prolapſus* of the Inteſtines through them, not much unlike that oblique Inſertion of the

De Structura Diaphragmatis. Cap. ii.

Uretres

Ureires and *Ductus Bilarius* passing between the Membranes of the Intestines and Bladder, whereby the retrocession of the Bile in one, and the Urine in the other is prevented.

N. *In the Dissection of these Muscles care must be taken not to wound the* Cremaster *on either side. The* Peritonæum *with its Contents present themselves next to our Examination, but they not being Subjects of our present Enquiry, they must be all immediately removed for Reasons already mentioned. We proceed next to the Muscles of those parts, which for conveniency in Dissection offer themselves next, namely, the* Testes, Penis, *Bladder of Urine, and* Anus. *The Body being laid with the Buttocks near the brink of the Table, and the Legs forcibly devarricated for the more commodious prosecution of the work, let the* Operator *place himself between them, and continue the Division of the Skin, Fat, and Membranes by a Semicircular Section on each side of the* Pubes *meeting in the* Perinæum *near the* Anus, *and begin to raise the Skin of the upper part of the* Penis, *freeing it from the Spermatick Vessels, next raising that part which lies in the* Perinæum. *This done,*

and

and the Fat removed, the following Muſcles offer themſelves to view.

CHAP. II.

Of the Muſcles of the Teſtes.

EAch Teſticle is attended with one proper Muſcle called *Cremaſter*, to which *Riolan* adds another, and thinks it common to both, comprehending them in the manner of a Bag, and ſerving for their Succuſſation; but other Anatomiſts eſteem it a Membrane only, calling it *Dartos*.

Anthropog. lib. 5. C. xxxvi.

Cremaſter.

Or *Suſpenſor Teſticuli*. It Ariſes Fleſhy from the Loweſt and Forepart of the Spine of the *Os Ilium* (37) and Upper part of the *Ligamentum Pubis*, its Fibres running parallel with thoſe of the *Obliquus Aſcendens*, (not with the *Tranſverſalis* as *Bartholin* objects againſt *Riolan*) and almoſt encompaſſing the Proceſs of the *Peritonæum*, deſcends on it to its Inferior part, which entertains the Teſticle.

De Graaf de Virorum Organis T. 2. F. 1. CD. *Fig. xvii*

Lib. 1. cap. xxii.

Its name declares its Office.

CHAP.

CHAP. III.

Of the Muſcles of the Penis.

ANatomiſts generally deſcribe two Pair of Muſcles belonging to the *Penis, viz. Acceleratores* and *Erectores.* To theſe *Fabritius ab Aquapendente* adds a Third Pair, which are alſo mentioned by *Bidloo*, and expreſt in his 47 *Table.*

Acceleratores Urinæ.

So called from their Uſe in expediting the Ejection of Urine and Seed. Authors have been miſtaken in the aſſigning the Originations of theſe Muſcles, either to the *Sphincter Ani* or Tubercles of the *Oſſa Iſchij.* They Ariſing Fleſhy from the ſuperior part of the *Urethra*, as it paſſes under the *Oſſa Pubis*, and encompaſſing the External part of the Bulb of its Cavernous Body (*CC*) (mentioned in our *Appendix*). Both Muſcles meet on the Inferior part, (*b b*) and march according to the length of the ſeam of *Fig.* xii.

the

the skin in the *Perinæum*, parting from each other (*cc*) They Aſcend to their Inſertions on each ſide the *Corpora Cavernoſa Penis* (*GG*). *Fig.* xii.

Beſides the Uſe commonly aſcribed to theſe Muſcles in compreſſing the *Urethra* in driving out the Remains of Urine, and promoting the Ejaculation of the *Semen in Coitu*, (which Action is chiefly done by the laſt deſcribed Part of them embracing the *Urethra* as they paſs to their Inſertions on each ſide the Cavernous Bodies of the *Penis*) They alſo aſſiſt the following Muſcles in Its Erection, by driving the Blood contained in the Bulb of the Cavernous Body of the *Urethra* (*A*) towards the *Glans* in greater quantities, whereby it becomes diſtended, the Veins which carry off the Refluent Blood from the *Corpus Cavernoſum Urethræ* at that time being alſo compreſt by the Tumefaction of theſe Muſcles. *Fig.* xiv.

Erectores Penis ſeu Erigentes.

By ſome called *Directores*, and by *Spigelius*, *Collaterales Penis*. They Ariſe Fleſhy from the External Knob of the *Lib.* 4. *cap.* xii.

Os

Os Ischium (39) below the beginnings of the Cavernous Bodies of the *Penis*, in whose thick Membrane they are Inserted. (*DD*). *Fig.* xvii. *Fig.* x. *Fig.* xii. *F F.*

When these Muscles Act they pull the *Penis* towards the *Ossa Pubis*, whereby its great Vein is compress't, and the Refluent Blood denied its passage under those Bones, by which means the *Penis* is Erected, of which, hereafter we shall give a more full Account.

Transversalis Penis.

So called from their situation. These are mentioned by *Lindanus* after *Aquapendens*, as **Thom. Bartholin* takes notice. They Arise near the Former, from whence they pass Transversly to their Insertions at the upper part of the Bull of the Cavernous body of the *Urethra*. (*EE.*) *Lib.* i. *ap.* xxiv. *Fig.* x, *and* xii.

To these may be added the Muscles of the *Clitoris*, and that of the *Pudendum* in Women.

Anatomists differ concerning the number of these Muscles belonging to the *Clitoris*, some with *Falloppius* (who first Observed them) reckon One *Observat. Anatom.*

De Mulierum Organis, &c Pair only; Others Two; but *De Graaf* inclines to the Firſt Opinion, which we alſo think moſt agreeable to Truth. Authors have not beſtowed any Proper Names on them, but ſince they agree ſo exactly with the *Erectores Penis* (above Treated of) except in point of Magnitude; The ſame Apellations may alſo ſerve here.

Erector Clitoridis.

De Graaf de Mulierum Org. T. xl ii. *T.* iii. *F.I. GG.* This Ariſes Fleſhy from the External Margin of the *Os Iſchium* (39), and is Implanted into the Beginning of the Cavernous Body of the *Clitoris*. *Fig.* xvi

The Action and Uſe of This and its Partner is the ſame with the *Erectores Penis*. The other Pair of Muſcles aſcribed to this Part by Vulgar Anatomiſts, and Figured by *De Graaf*, are a Portion of the Following, adhering to it.

Sphincter Vaginæ.

Ibid. e e. and T. iii. *F.* 28. *EE.* This lies immediately under the *Clitoris*, incompaſſing the *Vagina* with Circular Fibres, Three Fingers in Breadth; in ſome Subjects, it ſcarcely appeareth Fleſhy. This

This Acting not only ſtreightens the *Vagina*, but thereby alſo it hinders the Blood in its return from the *Plexus Retiformis*, of the *Pudendum*; by compreſſing ſome of its ſubjacent Veins which paſs underneath, by which means the *Labia* become Diſtended, and *Vagina* Contracted.

CHAP. IV.

Of the Muſcles of the Bladder of Urine.

Lib. de Muſculis, C. xxviii. *Galen* and the Ancient Anatomiſts take notice but of One Muſcle belonging to this Part, *viz.* the *Sphincter*, but *Aquapendens* mentions an other, which *Spigelius* calls *Detruſor Urinæ* from its Uſe, which we ſhall firſt Deſcribe.

Detruſor Urinæ.

Spigel. Lib. viii. C. 13. AM. This by ſome is reckoned the Firſt Proper Membrane of the Bladder, lying under that which is derived from the *Peritonæum*; its Carnous Fibres embracing the whole Bladder like a Hand (as *Spigelius* repreſents it)

Lib. iv. Cap. 12.

compreſſes it in the Evacuation of the Urine.

Sphincter Veſicæ.

Obſervat. Anatom. *Fallopius* obſerves, that the Anatomiſts of his Age had not well Deſcribed this Muſcle in placing it below the *Proſtatæ*, in which caſe as he alledges the *Semen* in the Venereal Act could not be emitted without the Urine; which Obſervation latter Authors have not taken notice of, either through inadvertency in Diſſection, or being impoſed on by Part of the *Levatores Ani*, which remained on the *Proſtates*, which *Riolan* calls the *Sphincter Externus.* It is ſeated in the upper part of the neck of the Bladder, immediately above the *Glandulæ Proſtatæ*, 'Where (as *Fallopius* ſays) 'you muſt not expect to find an entire Muſcle and Subſtance diſtinct 'from the Subject Cannal, like that 'of the *Anus*, but the more Fleſhy 'part of the neck of the Bladder com-'poſed of many Tranſverſe Fibres, 'whoſe Contraction hinders the Involuntary Egreſs of the Urine.

Anthrop. Lib. v. C. xxxvii.

Obſervat. Anatom.

N. *To discover these Transverse Fibres, our* Author *advises to Immerge the Bladder in scalding Water after Inflation, the External Right Fibres being removed These will appear underneath.*

CHAP. V.

Of the Muscles of the Anus.

THe *Penis*, together with the Bladder of Urine being removed, the Muscles of the *Anus* offer Themselves to View. Anatomists have not agreed in their Number, *Galen* divides the *Sphincter* into Two, (*viz.*) *Carnosus*, and *Cutaneus*, which with the Two *Levatores* make Four Muscles belonging to this Part. *Riolan* multiplies them to the Number of Nine, Three *Sphincters*, namely *Carnosus* or the Outermost, *Cutaneus* or the Middle, and *Vaginalis* or the Superior and Inmost, and Six *Elevators*, Two Internal, and Four External; but this Opinion seems rather grounded on Fancy, or some particular Subject, than a general Appearance of them in Dissection.

De Musc. cap. xxx.

Anthrop. lib. v. *cap.* xl.

Bid.T.47. F.5. B, D, D, C.

Sphincter Ani.

This is a Large, Thick, Fleſhy Muſcle encompaſſing the *Anus*; its Figure and Series of Fibres Externally, immediately under the Skin, incline to an oblong Oval; It is Connected Forwards to the *Accelerator Urinæ* (*D*) (as above noted); Backwards to the *Os Coccygis*; As it is continued farther upon the Body of the *Inteſtinum Rectum*; its Fibres are Circular for near Two Inches in Breadth; it is much larger in Man than in other Animals, in whom by reaſon of the erect Poſition of the Body, there is greater Force required to Retain the *Fæces*, which is the Office of this Muſcle. *Fig.* xii.

Ibid. E E.

Levatores Ani.

Animad. in lib. Anatom. Spigelii.

Riolan reprehends *Spigelius* for his Deſcription of theſe Muſcles. They Ariſe Fleſhy from each ſide the *Oſſa Pubis*, internally within the *Pelvis* (33), as alſo from part of the *Os Iſchium* (31) and *Sacrum* (*O*); from theſe Places, like Lines drawn from a Circum- *Fig.* xviii

cumference towards a Centre, its Fibres Descend over the *Musculi Marsupiales*, to their Implantation at the Lower end of the *Intestinum Rectum* in the *Anus*. The Use of these Muscles is chiefly to Suspend and Draw the *Anus* Upwards, lest the *Fæcis* should be burthensom to the *Sphincter*. In their Descent on each side Forwards from the *Ossa Pubis* they Pass close over the *Glandulæ Prostatæ*, in a manner embracing them (as before) by which Mechanism they are rendred capable of Compressing them; and by Retraction of the *Anus* at the same time Act on the *Vesiculæ Seminales*, in order to promote the Emission of the Seed *in Coitu*. We proceed next to the Muscles of the Hairy-scalp, *&c.*

CHAP. VI.

Of the Muſcles of the Hairy-ſcalp, and Fore-head.

N. *TO Demonſtrate theſe Muſcles, the Following Method may be Obſerved; make Inciſion through the Common Integuments of the Head, the Firſt and Direct Line of Diviſion being continued from the Middle, and Inferior part of the* Os Occipitis, *to the ſame part of the* Os Frontis; *The other Tranſverſe from Two Circular Ducts round each Ear, interſecting the Former on the* Sinciput, *begin from the Concourſe of Angles, taking Care in Freeing the Fore-head not to Raiſe the* Frontales.

Occipitalis.

This and its Partner are mentioned by *Columbus*, and Accurately Deſcribed by *Falloppius*; They are Short, but Broad, Thin, Fleſhy Muſcles, ſituated on the *Occiput*, from whence they Derive their Names; each of theſe Ariſes Fleſhy from that Part of the *Os Occipitis* Fig. xviii.

Lib. v. *cap.* vii. *Obſervat. Anatom.*

pitis where the *Mastoideus* and *Musculus Splenius* are Inserted, and soon becoming Tendinous joins with the *Pericranium*, which firmly adheres to the Hairy-scalp on the *Sinciput*. When these Act, they pull the Hairy-scalp Backwards.

Frontalis.

This Arises Thin, Broad, and Fleshy, from the Upper part of the *Os Frontis* near the *Sutara Coronalis*, and Descending by the Posterior and Fore part of the *Temporalis*, meets with its Partner near their Insertions to the Skin of the Eye-brows. (AA.) *Fig.* i.

These Acting draw up and wrinkle the Skin of the Forehead, and cannot Antagonise the Former Muscles, as some Imagine, since their Originations is from the Bone Above, and their Terminations in the Skin of the Lower part of the Forehead.

bservat. Anatom. Besides these, *Volcherus Coiter* counts another Pair, which later Authors call *Corrugatores*, Arising near each Great *Canthus* of the Eye at the *Puncta Lachrymalia*; seeming to Terminate about the Middle Region of the Eye-brows.

brows. But We rather incline to the Opinion of Others, who take them to be Two Oblique Elongations of the Former Muſcles.

N. *To raiſe the Skin, and diſcover the Muſcles of the Face, which in the Order of Diſſection are next to be proſecuted, continue your Former Diviſion from the* Dorſum Naſi *where you before left it, to its* Apex, *from Two Semicircular Sections on each ſide the* Alæ Naſi *to the* Septum Narium, *make a direct one to join with a Circular Inciſion about the Lips, and from the middle of that of the Lower Lip, draw your Knife directly over the Chin Neck and* Sternum *till you meet that longitudinal one made in Diſſection of the Muſcles of the* Abdomen. *The Skin is beſt cleared from the Eyelids, after Raiſing it from the circumambient parts. In the Practice of this Operation, ſpecial Attention muſt be had, leſt you wound the* Orbicularis Palpebrarum ; *Care alſo muſt be taken in Raiſing the Skin of the Neck, and Face, not to raiſe the* Quadratus Genæ *with it.*

CHAP.

CHAP. VII.

Of the Muſcles of the Eye-Lids.

*e Diſ-
ct. Muſ-
l. Cap.
I.
lum.
orp. Fab.
ib. II.
ap. X.*

GALEN and the Antient Anatomiſts, together with *Veſalius*, were extreamly deceived in their Ideas of theſe Muſcles, in dividing the *Orbicularis* into two, and ſuppoſing thereby all the Motions of the Eye-Lids were performed. But this Syſteme was firſt alter'd by *Falloppius*, partly from an Intimation of *Oribaſius* in his Book *De Diſſect. Muſcul ex Galeno Cap.* VI. where he takes notice that in the Cure of an *Ægilops*, not only the deſcribed Beginnings of theſe Muſcles are Cut and Burnt away, but the Bone underneath Exfoliated, and yet the Motion of the Eye-Lids remain: And partly from the Diſſection of the Eye in a Sea-Calf, where he obſerved four Muſcles latent in the *Orbit*, inſerted above Underneath and on both ſides the *Palpebræ*: He was induced to make the like Enquiry in Man, in whom he happily diſcovered

*bſervat.
natom.*

the

the *Aperiens Palpebram Rectus*, which ſhall be deſcribed hereafter. We mention this Paſſage, becauſe ſome latter Authors have favoured the Account of the former, retaining their Diſtinctions into *Semicircularis Superior*, and *Semicircularis Inferior*.

Orbicularis Palpebrarum.

This is a Thin Fleſhy Muſcle, whoſe Fibres do Circularly environ the Eye-Lids *BB*, and are Inſerted to them, (like the *Sphincter Labiorum*) not adhering to any Bone, from whence we may derive their Origin, except the Superiour part of the great Bone of the Noſe; by ſome reckoned the fourth Bone of the Upper Jaw. *Fig. i.*

This Muſcle Acting like the Sphincters of other Parts, Conſtringes the Eye-Lids. To theſe *Riolan* adds another Muſcle belonging to each Eye-Lid, which he calls *Ciliaris*, which we take to be a Portion of the former adjacent to the *Cilia*. *Anthropog. Lib. V. Cap. X*

To diſcover the following Muſcle, that part of the former, lying between the Upper Eye-Lid and Eyebrow, muſt be Raiſed; After which, the Glandula Lachri-

Lachrimalis, *with part of the Fat within the* Orbit *being removed, by extending the Upper Eye-Lid, either with a Hook, or your Fingers only, its Tendinous Insertion and slender Fleshy Body will appear.*

Aperiens Palpebram Rectus.

id. T. 2. F. 4. l.

So called from its streight Progress and Use. It Arises Sharp and Fleshy from the profoundest part of the *Orbit,* near the place where the Optick Nerve is Tranfmitted, passing directly over the *Musculus Attollens* it becomes Tendinous as it marches over the Bulb of the Eye; whence growing still Broader and Thinner, till it is Inserted to the whole Superiour part of the Upper Eye-Lid.

Tyron. F brit. De Visione. Cap. XI.

These Muscles of the Eye-Lids being removed, we proceed next to those of the Eye it self; in the Demonstration of which, Aquapendens *proposes two ways; the one shewing the Eye with its Muscles* in situ, *the other the Eye taken out of its Cavity, and its Muscles expanded on the Table: The First exhibiting their Motions, the Second their Figure or Shape. In the First, though our Author advises the Brain to be taken out, and the Bones of the*

the Orbit *divided; yet we chuſe to perform this Operation in the following manner, without troubling our ſelves with either. Both Eye-Lids being removed, firſt, with your Fore-Finger feel gently for the* Trochlea, *ſituated near the brink of the* Orbit (*o*), *towards the Noſe; then clear the Tendon which paſſes through it: This done in like manner clear the Oppoſite Muſcle, the* Obliquus Inferior, *firſt obſerving its Origination at the brink of the Inferior part of the* Orbit (*e*), *with the Aſſiſtance of a ſmall Hook and Sciſſars extract the Fat and Membranes, and Veſſels from between the ſtreight Muſcles. The other manner of Demonſtration may be Practiſed in the ſame Eye, or with the contrary, taking Care in dividing the* Trochlea *from the* Orbit, *to prevent Wounding the Tendon, which paſſes through it; The Inferiour Oblique Muſcle being cut off cloſe from its Origin, as alſo the reſt of the Muſcles, and Optick Nerve at the profoundeſt part of the* Orbit, *and the whole Eye diſlodg'd; Diſingage its Muſcles, and diſplay them, whereby you may obſerve, that the* Trochlearis *is the longeſt Muſcle of the Eye; and that its Inſertion is directly behind the* Attollens; *and on the contrary, the* Obliquus Inferior *is*

Fig. iii.

Fig. iii.

the

the ſhorteſt, whoſe Termination is directly behind the Abducens, *by which means you may diſtinguiſh each, and find the ſide to which it belongs.*

CHAP. VIII.

Of the Muſcles of the Eye.

De re Anatom. lib. V. cap. VIII

Columbus reprehends *Galen*, *Veſalius*, and the Anatomiſts of his Time, for aſcribing the *Aperiens Palpebram Rectus*, and *Obliquus Superior* to the Eye, and at the ſame time commits no leſs an Error himſelf, not only in ſuppoſing that the laſt named Muſcle belongs to the Eye-lid, but imagining that the *Obliquus Inferior* begins and ends in the *Cornea* of the Eye. But the Accurate *Fallopius*, who firſt obſerved the *Trochlea*, has given us the moſt exact Deſcription of theſe Muſcles.

Obſervat. Anaton.

Obliquus Superior or *Trochlearis.*

It receives its firſt Denomination from its Oblique Poſition and Courſe, in regard of the reſt of its Fellows.

the

The Second, it derives from that Cartilaginous Ring, ſuſpended near the Brink of the upper Part of the *Orbit* towards the Noſe (*o*) through which its Tendon paſſes, being reflected on it, as a Rope on a Pully: (A) Beſides which, it is called *Longiſſimus Oculi*, as exceeding the others in length. It ariſes ſharp, and Fleſhy from the profoundeſt Part of the *Orbit*, near the Origination of the *Abducens*, and becoming a Fleſhy Belly (D) as it paſſes Obliquely cloſe under its Superior Part, makes a round Tendon running through the *Trochlea* (as above mentioned) from whence reverting back (A) its inſerted to the *Tunica Sclerotis*, in the middle of the Diſtance between the Termination of the *Attollens*, and Optick Nerve, towards the back Part of the Bulb of the Eye. (A) *Fig.* iii. *Fig.* ii.

Obliquus Inferior.

Alſo called *Breviſſimus Oculi*, it being the ſhorteſt Muſcle of the Eye. This ſprings ſharp and fleſhy from immediately within the Lower, and almoſt outward Part of the *Orbit* (*e*), at *Fig.* iii.

the

the Juncture of the First Bone of the Upper Jaw (6), with the Fourth (5.), becoming Thicker Ascends Obliquely over the *Deprimens*, growing Tendinous at its Insertion to the *Tunica Sclerotis* near the Implantation of the Former, directly betwixt the *Abducens* and Optick Nerve. (I.) *Fig.* xvii. *Fig.* ii.

These two Oblique Muscles are by some called *Circumagentes*, and *Amatorii* from their Actions in Winding and Rolling the Eye about, which Motions we call Ogling. Anatomists differ in assigning the Proper Offices of these Muscles, some asserting when the Superior Acts, the Eye is Rolled from the Nose, when the Inferior, to it: Others on the contrary, suppose that the Former Draws it to the Nose, and the Latter Directs it towards the Lesser *Canthus* of the Eye. But if we rightly consider the Position of the *Trochlea* (*o*), which determines the Motion made by the Superior Oblique Muscle, and the Origination of the Inferior (*e*), and that the Tendon of the Former, and the whole *Ductus* of the Latter pass Obliquely from the External edge of the *Orbit* to their Insertions at the Back part of *Fig.* iii.

the Bulb of the Eye, as expreſt *Fig.* ii. We muſt neceſſarily conceive, that the Vulgar Doctrines of their Motions are Erroneous: wherefore if the *Obliquus Superior* Acts, the Poſteriour Part of the Bulb of the Eye muſt approach towards the *Trochlea*, whereby its Globe is not only drawn ſomewhat Forwards, but its *Pupil* is directed downwards; ſo on the contrary, when the *Obliquus Inferior* Acts, the Poſterior part of the Bulb of the Eye approaches towards the External edge of the Inferior part of the *Orbit*; and its *Pupil* is directed Upwards, and its whole Globe Pulled ſomewhat outwards. Hence it is that the Bulb of the Eye is more Protuberant in thoſe Actions, which Contrivance in Nature ſeems very neceſſary, ſince the Projections of the Eyebrows and Cheeks would be liable to hinder our Proſpect, whether directly Upwards or Downwards: Beſides the Uſes of theſe Oblique Muſcles now mentioned, they have ſtill a more notable one, not only in pulling the whole Eye directly Forwards, but they hold it from being Retracted, when any of the Four Streight Muſcles Act, which

otherwiſe would rather draw it Inwards, then turn it either Sideways, or Upwards, or Downwards. But theſe Muſcles, one of them Deſcending inwardly from the Uppermoſt, and the other Aſcending from the Lowermoſt edge of the *Orbit* to their Inſertions, in effect not unlike an *Axis*, prevent its being Retracted. Hence it is when they ceaſe to Act, the whole Globe of the Eye ſinks, which may give Occaſion for that Vulgar Tradition, that the Eye-ſtrings break in Dying Perſons.

The reſt of the Muſcles of the Eye are called *Recti* from their Streight Progreſs and Uſe.

Elevator Oculi.

It is alſo called *Superbus* from its moral ſignification, it being one of the chief common marks of a Haughty Diſpoſition to look high; wherefore its Oppoſite Muſcle is called *Humilis*; but *Placentinus* thinks the Motions of the Upper Eyelids denote thoſe Diſpoſitions more ſignificantly, for ſays he, *Qui enim hanc elatam habent*, (ſpeaking of the Upper Eyelids) *Superbi & Feroces*

Caſſerius, Lib. v. c. xviii.

Feroces ſunt; qui vero Depreſſam ac dimidium fere Oculum Claudentem, ita ut Terram adſpicere videantur, Humiles ac Mites ſunt. This Muſcle Ariſes Sharp, and Fleſhy, near the place where the *Optick Nerve* enters the *Orbit*, and becoming a Fleſhy Belly makes a Thin Tendon Inſerted to the *Tunica Sclerotis* on the Superior and Forepart of the Bulb of the Eye under the *Adnata.* (*E.*) *Fig.* ii.

Depreſſor Oculi.

This, like the Former, Ariſes from the Profoundeſt Part of the *Orbit*, and like it paſſes directly to its Inſertion to the Oppoſite part of the Globe of the Eye. (*G.*) *Fig.* ii.

Adductor Oculi.

So called becauſe it inclines its *Pupil* towards the Noſe, and *Bibitorius*, it directing the Eye towards the Cup. The Origin and Progreſs of This is agreeable with the Two Former, and is Inſerted to that part of the *Tunica Sclerotis* bordering on the Noſe. (*H.* *Fig.* ii.

Ab-

Abductor Oculi.

So called from its Action in Retracting the Eye from the Noſe; it is alſo called *Indignabundus*, becauſe it is made uſe of in ſcornful reſentments. This like the Three Former Ariſes where the Optick Nerve is Tranſmitted; and is Inſerted like Them to that part of the *Tunica Sclerotis*, that reſpects the Leſſer *Canthus* of the Eye, Oppoſite to the Implantation of the Former (*F*). When theſe Four Right Muſcles Act together, They Pull the whole Globe of the Eye into the *Orbit*, from whence it's Pull'd Forwards again by the Two *Obliqui* as before. *Fig.* ii.

Diſſertat. Anatom. Cap. vi. To theſe *Mullinete* adds another, which he calls the Fifth Right Muſcle; the Office of which he confines to the Motion of the *Trochlea*, (ſuppoſing it moveable) but what he has ſaid concerning it either as to its Exiſtence or Uſe is ſo Obſcure, if not Impoſſible, that We can ſee no Reaſon to give it any place or deſcription amongſt thoſe other Muſcles of the Eye. Neither could we ever diſcover by Diſſection any ſuch Muſcle, but we ſuſpect

that part of the *Orbicularis Palpebrarum*, which adheres to the *Trochlea*, might occaſion the Miſtake, which I rather remark, becauſe I find others upon *Mullinete*'s Authority, without ſtrict enquiry into the Matter, have fallen into the ſame Error.

CHAP. IX.

Of the Muſcles of the Noſe.

THE Noſe is altogether immovable, except in its Lower Griſtly parts, which are not improperly called *Alæ* or *Pinnæ*, theſe by their approach or Receſs, do Conſtringe, or Dilate, the Noſtrils. *Galen* aſſigns but One Pair of Muſcles to them, to which *Jacobus Beringarius* of *Carpus* in his Commentary on *Mindinus* adds another, Ariſing from the extremities of the Bones of the Noſe, and Inſerted to the Inſide of the *Alæ*; wherein he is followed by *Veſalius*. *Columbus* pretends thoſe deſcribed by *Galen* belong to the Upper Lip, and that Thoſe placed in the inſide of the Noſe (above mentioned) are intirely

De Diſſect. Muſc. Cap. iii.

Lib. ii. *Cap.* xiii. *De re Anatom. Lib.* v. *Cap.* iv.

ficti-

fictitious; Describing still another Pair Arising from the upper parts of the Bones of the Nose, and Inserted to their *Alæ*. *Falloppius* is not positive whether he has seen Those Internal Muscles mentioned by *Carpus* and *Vesalius*; but Mr. *Bvessier* an Accurate Anatomist informs me he has frequently Observed them, adding that those Described by *Columbus* above mentioned do not properly belong to the *Alæ*, but are rather parts of the *Orbiculares Palpebrarum*. *Falloppius* still describes another Muscle, not taken notice of before him, which latter Anatomists call *Constrictor Alæ Nasi*; The Invention of which *Placentinus* assumes. In Describing these Muscles we shall imitate the Order of *Riolan* and others, who divide them into *Proper* and *Common*.

Observat. Anatom.

Observat. Anatom.

Casser, Lib. iii. *Cap.* ix.

The *Proper*, are those which move the *Alæ* only, as the *Dilatores Alarum Nasi*.

The *Common*, are those which move the *Alæ* together with the Upper Lip, as the *Retractores*, and *Constrictores Alarum Nasi*. First of the *Proper*.

Dilatores Alarum Naſi.

Theſe are Small Thin Muſcles, having a double Order of Fibres decuſſating each other, not unlike the *Muſculi Intercoſtales*: They Ariſe from the Inferior and Internal parts of the *Oſſa Narium*, and are ſoon Inſerted to the ſuperior parts of the *Alæ*. Theſe pull up the *Alæ* and Dilate the Noſtrils; but I am apt to think they are not found in all ſubjects.

Retractores Alarum Naſi & Elevatores Labii Superioris.

Theſe were mentioned by *Galen*; They Ariſe Broad and Fleſhy from the Fourth Bone of the Upper Jaw (5), *Fig.* xvii. whence deſcending obliquely they are ſoon Inſerted to the Upper Lip and *Alæ Naſi*. (C.) *Fig.* i.

The *Conſtrictor Alæ Naſi* mentioned by *Falloppius* and *Placentinus*, we ſuſpect to be altogether Fictitious.

Con-

Conſtrictores Alarum Naſi ac Depreſſores Labii Superioris.

Theſe Ariſe Fleſhy from the Fore-parts of the Fourth Bones of the Upper Jaw, immediately above the Gums of the *Dentes Inciſorii*, and aſcending, are ſoon Inſerted to the roots of the *Alæ Naſi*, and ſuperior parts of the Upper Lip. (*D.*) *Fig.* iii.

When theſe Act they draw the Upper Lip and *Alæ* downwards; by which means they bring the latter nearer each other. Hence, when we attempt the Reception of any Odoriferous *Effluvia*, the Upper Lip is pulled downwards.

CHAP. X.

Of the Muſcles of the Cheeks and Lips.

SInce Authors generally diſagree concerning the Number, Deſcription, and Uſe, of theſe Muſcles; We ſhall not Inſert their particular Differences.

Theſe

Theſe Muſcles of the Lips are either *Common* to the Cheeks and Lips, or to both Lips, or *Proper* to the Upper or Under Lip only.

Thoſe *Common* to the Cheeks and Lips, are Two Pair on each ſide, Two Muſcles, (*viz.*) the *Quadratus* and *Buccinator*.

Veſal. M. T. 3. ſ.

Quadratus Genæ, ſeu Tetragonus.

De Muſ. Cap. ii.

By *Galen* called *Platuſma Muoides*, or the Muſcular expanſion. This is a great ſquare Muſcle lying under the skin of the Neck, and is ſpread over the whole Inferior Region of the Face. It Ariſes Thin and Membranous, according to *Galen*, from the Spines of the *Vertebræ* of the Neck; It alſo ſprings from the skin on the ſuperior part of the *Cucullaris*, and Pectoral Muſcle, from hence aſcending under the skin of the Neck becomes Fleſhy, and one part adhering to the *Os Hyoides*, is ſoon Inſerted to the Middle of the Lower Jaw; The other Broader portion proceeding farther to its Implantation in the Cheeks below the Angle of the Lips.

When

When both these Muscles Act, they pull down each Angle of the Mouth, together with the Cheeks, which Posture of the Face is the proper Expression of Sorrow. But if the Inferior Parts of these Muscles (which lie on the Neck) Act alone, they distend the superincumbent skin by making it Aproach to a Direct Line with the *Claviculæ* (14) and Lower Jaw Bone (10), which otherwise is Indented according to the Formation of the part, where by a Double Chin (as they call it) is Represented. *Fig.* xvii.

Buccinator.

So called because in Trumpeters it Forces out the Breath. This Muscle does not spring from the Gums of the Upper, and end in those of the Nether Jaw; nor is it of that Figure which Vulgar Anatomists would perswade Us; or Intertext with various Orders of Fibres, as others Pretend. It Arises Broad and Fleshy from the Forepart of the *Processus Coronæ* (*B*) of the Lower Jaw Bone, from hence proceeding with direct Fibres it adheres to the Gums of Both Jaws, and *Fig.* iv.

and is ſo Inſerted to the Angle of the Lips. (*K.*) *Fig.* i.

Through the middle of this Muſcle Paſſes the *Ductus Salivalis ſuperior* (*d*), which *Placentinus* had obſerved and called *Vinculum robuſtum* (as *Caſper Bauhin* writes.) Beſides the Uſe Trumpeters makes of this Muſcle, it alſo pulls the Lips or Mouth to one ſide.

Theat. Anatom. Lib. iii. *Cap.* lxix.

The Muſcles *Common* to both Lips are ſuch as are Inſerted into the Angles of the Mouth, as the *Zugomaticus, Elevator, Depreſſor,* and *Conſtrictor Labiorum.*

Zugomaticus.

So called by *Riolan* becauſe it ariſes from the *Os Jugale* or *Zugoma* (9). *Fig.* xvi. Its Origination is Round and Fleſhy from the External part of the ſaid Bone, whence Deſcending Obliquely Forwards is Inſerted near the Angle of the Lips. (*G.*) *Fig.* i.

Anthropog. Lib. v. *Cap.* 12.

When this Muſcle and its Partner Act, they draw both Lips upwards, and make a Pleaſant Countenance.

Ele-

Elevator Labiorum.

This lies between the Former Muſcle and *Elevator Labii Superioris Proprius.* It Ariſeth from the *Os Quartum* of the Upper Jaw (5), and Deſcends Directly to its Inſertion under the Termination of the Former. (*D.*) *Fig.* xvii. *Fig.* i.

Depreſſor Labiorum.

This Ariſes Fleſhy from the Lower Edge of the Inferior Jaw Bone (10) laterally, and Aſcends Directly to its Inſertion at the Angle of the Lips. (*H.*) *Fig.* xvii. *Fig.* i.

This with its Partner and the *Quadrati* Acting expreſs a ſorrowful Countenance, in drawing down the Corners of the Mouth and Cheeks.

Conſtrictor Labiorum it. Sphincter, & Orbicularis Labiorum.

This environs the Lips with Orbicular Fibres, and when it Acts it Purſes them, wherefore ſome name it *Oſculatorius.* (*F F.*) *Fig.* i.

The

The Muſcles *Proper* to the Upper or Nether Lip in particular are three Pair, (*viz.*) *Elevatores Labii ſuperioris*; *Depreſſores* and *Elevatores Labii Inferioris*: Of theſe in Their Order.

Elevator Labii Superioris.

This Ariſes Fleſhy from the Fore-part of the *Os Quartum* of the Upper Jaw (5) immediately above the *Elevator* treated of before, and deſcends obliquely under the skin of the Upper Lip, joining with its Partner in a Middle Line, from the *Septum Narium* to its Termination in the *Sphincter Labiorum*. (*EE.*) *Fig.* xvii *Fig.* i.

Depreſſor Labii Inferioris.

Its difficult to determine whether This be One only or Two Muſcles. It lying between the *Depreſſores Labiorum Communes* (deſcribed above) poſſeſſes that part of the Lower Jaw called the Chin (10), and Aſcending with a direct and tranſverſe order of Fibres is Inſerted into the Nether Lip, in Depreſſing of which it Turns it Outwards. (*I.*) *Fig.* xvii *Fig.* i. *I.* *Fig.* iv. *G. G.*

Ele-

Elevator Labii Inferioris.

This Muſcle with its Partner lies within the Lower Lip. Theſe We Firſt Obſerved ſome time ſince, They Ariſe Fleſhy from the Inferior Part of the Gums of the Lower Jaw, which belong to the *Dentes Inciſorii*, and Deſcend Directly to their Implantations in the Inferior part of the Skin of the Chin (*FF*); hence it is when Theſe Act they make divers Indentations in the Chin, as may be Obſerved in Living Perſons when the Lower Lip is drawn upwards. *Fig.* iv.

CHAP. XI.

Of the Muſcles of the Auricula *or Outward Ear.*

Obſervat. Anatom. FAlloppius the Author of theſe Muſcles, informs us there are ſometimes found Three, belonging to each Auricle; the Firſt or *Attollens*, the Second or *Deprimens*, and the Third which is part of the *Platuſma Myoides*. Theſe, he ſays, are ſometimes wanting

ing, though he has frequently ſeen them. *Placentinus* multiplies them to the number of Five; but *M. Du Verney* in his Accurate Treatiſe of the Ear deſcribes Two only, whoſe Account we have found the trueſt from thoſe Enquiries we have made into this Part.

Caſſerius, Lib. iv. Cap. iv.

Attollens Auriculam.

This conſiſts of divers Fleſhy Fibres, and is annext to that part of the *Pericranium* that covers the Temporal Muſcle, whence it Deſcends Directly to its Implantation at the ſuperior part of the ſecond Wrinkle of the Cartilage of the Ear. (*M.*) *Fig. i.*

Its Name declares its Uſe.

Retrahens Auriculam.

Spigel. Lib. iv. T. I. F. I. T T.

By ſome called *Triceps Auris*, becauſe it has ſometimes Three Beginnings. *M. Du Verney* ſays it is compoſed of Five or Six Fleſhy Fibres which have their Origination from the ſuperior and Forepart of the *Apophyſis Maſtoides*, and Deſcend obliquely to their Inſertion in the middle of the *Concha Auriculæ*.

Del'Org. Del'Ovie.

N. *Theſe*

N. *These Muscles of the Internal Ear cannot be Demonstrated till after those of the Head are dispatcht, and the Brain removed; but we shall follow the example of others, and insert their Descriptions in this place; it being also customary in the Myological Lectures at Chirurgeons Hall to shew them in a dried Preparation from the precedent Subject.*

CHAP. XII.

Of the Muscles of the Internal Ear.

THese Muscles were altogether unknown to former Anatomists, the most Internal of those belonging to the *Malleus* is Accurately Described by *Bartholomeus Eustathius*, and is called *Internus Auris*. *Volckerus Coiter* mentions Two Muscles lattent on the second *Meatus* or *Concha* commonly called *Timpanum*, but does not Describe them; his Observations being made from Brutes, we suspect one of them was the Internal Muscle of *Eustathius*, and the other the *Musculus Stapidis*. *Fabritius ab Aquapendente*, and *Cassarius* of *Placentine* contend for the In-

uscula, natomi-
natom. bservat.
e Aure ars prim ib. iv. *ap.* xii.
e Aure, ib. iv. *ap.* xiii.

vention of another lying in the *Meatus Auditorius* called *Externus*, in the deſcription of which they are followed by moſt Anatomiſts except *M. Du Verny*, who (not taking notice of the Accounts of others, but Writing from Diſſection only) Deſcribes Two Muſcles belonging to the *Malleus*, wherein he omits the External one of *Aquaperdens* and *Placentinus*, and in ſtead of it adds another which he alſo calls *Externus*, becauſe it lies on the External Bony *Paries* of the *Ductus*, leading from the Palate to the Ear, which from its Poſition we call *Obliquus Auris*; hence it follows that Three Muſcles belong to the *Malleus*, of which the firſt that appears in Diſſection is the *Externus* of *Aquapendens*; the ſecond is the *Externus* of *Du Verny*, which we call *Obliqus Aurus*, and the Third is the *Internus* of *Euſtachius*; to which may be added the Fourth belonging to the *Stapes*, called *Muſculus Stapidis* Deſcribed by *Placentinus* in Brutes, and in Man by *Du Verny*.

For the better Demonſtration of theſe Muſcles (after the Diſſection of the Brain and all the Muſcles which ariſe from, or

are

are Inſerted to the Baſis *of the* Cranium) *Divide the* Os Temporale *with part of the* Os Sphænoides *of one ſide, and the* Os Occipitis *on the other, from the reſt of the Bones, (it being well cleared of the Muſcles, Membranes and Veſſels, that remain on it) with a ſmall ſemicircular Chiſel cut away the Inferior Part of the* Meatus Auditorius, *taking care not to Wound the* Membrana Timpani. *This Performed, you muſt be very cautious in Raiſing the Glandulous Membrane that Inveſts the* Meatus, *to which the External Muſcle adheres. The other Two Muſcles of the* Malleus *lying incloſed within the* Os Petroſum *require our next Inſpection. Firſt obſerve the laſt named Bone's Conjunction to the* Os Sphænoides, *where with the Chiſel lightly cut off their external* Laminæ, *and the Oblique external Muſcle of* Du Verny *will appear, together with the Internal one of* Euſtachius. *But if you ſtill proceed to break off more of the* Os Petroſum, *you will not only have a Proſpect of the Bony part of the* Aqueduct, *but the Articulation of the* Malleus *with the* Incus, *and the whole Cavity of the* Timpanum. *Wherein may be Obſerved the longer proceſs of the laſt named Bone, joining with the* Os

Orbiculare, *and* Stapes, *and the Tendon of the* Muſculus Stapidis, *running out of a Perforation in the* Os Petroſum, *down to its Inſertion in the Head of the* Stapes, *together with the Internal Surface of the* Membrana Timpani, *and the long Proceſs of the* Malleus *lying on it.*

Fabricius ab Aquapen. De Aure. F. 17. r.

Externus Auris vel Laxator Externus.

This lies in the Upper Part of the *Meatus Auditorius*, having a ſhort Fleſhy Body with a long ſlender Tendon. It Ariſes from the External and Superior Margin of the *Meatus Auditorius*, ſoon becoming a ſlender Tendon paſſes directly to the Upper part of the *Membrana Timpani*, on which it Deſcends for ſome ſpace to its Inſertion in the long Proceſs of the *Malleus*, where it is Contiguous to the ſaid Membrane. This draws the *Manabrium* of the *Malleus*, together with the *Membrana Timpani* Forwards.

Du Verny De Organ. Auditus, T. 6. F. 5. C D. F. 7. E.

Obliquus Auris.

This may be alſo called *Semicircularis* from its Poſition it lying in the Exter-

External Parts of the Bony Channel of the *Aquæduct*, whence marching ſomewhat Upwards and Backwards, it enters the *Timpanum* in a very oblique Sinuoſity Excavated immediately above the Bone where the *Timpanum* is Inchaſed, and is Inſerted to the ſlender Proceſs of the *Malleus*. The Sinuoſity in which this Muſcle paſſes is that which may be taken notice of in the Upper Part of the Bony Circle of the *Fœtus*. This we don't find Deſcrib'd any-where before *Du Verny*.

l. T. 6.
. 5. E. F.

Internus Auris.

This lies in a Bony Channel Excavated in the *Os Petroſum*, which makes one of the *Parietes Timpani*; one part of this Channel is without the *Timpanum*, and lies in the upper part of the Bony Paſſage which goes from the Ear to the Palate; the other Part which is within the *Timpanum*, advancing as far as the *Feneſtra Ovalis*, makes in that Place a Riſing, upon which, as on a Pully, the Tendon of this Muſcle paſſes to the other ſide of the *Timpanum*, and Inſerts it ſelf at the Poſterior Part of the Handle of the

Malleus a little below the Inſertion of the External Muſcle; by which means it draws it towards the *Os Petroſum*. The Origin of this Muſcle is Preciſely in that Place where the Bony part of the *Aquæduct* Terminates. It is covered with a Nervous Coat which forms a Sheath, accompanying it in its whole progreſs, and binding it faſt to the Channel. When this Muſcle Acts it pulls the *Manubrium* of the *Malleus* towards the *Os Petroſum*, whereby the *Membrana Timpani* becomes ſomewhat Concave outwardly.

Chap. iii. *Sect.* iv. In the Tendon of this Muſcle in ſome Animals *Schelhamar* has ſometimes Obſerved a ſmall Bone, which we ſuſpect he miſtook for the *Muſculus Stapidis*, in which Tendon, my very good Friend, Dr. *Adair*, an Accurate Anatomiſt, lately communicated his Obſervation of it to me, as it appear'd in a Calfs Head, which at firſt ſight may deceive the Enquirer, it being annext to the *Stapes*, and in Figure like the *Oſculum Quartum* of *Sylvius*; but if you be careful in your Examination, you may find both in the ſame Organ; the latter commonly remaining on the long Proceſs of the

the *Incus* when ſeparated: but if if you leave the *Stapes* (*C*) in *Situ*, you may ſee in that Animal, the Origin, (*E*) Progreſs (*F*) & Inſertion (*C*) of its Muſcle, together with the Bone in its Tendon (*F*) as it paſſes over a Projection of the *Os Petroſum*, which compoſes the *Foramen Rotundum* (*B*) on which we ſuſpect the Tendon of this Muſcle Acts, as on a *Trochlea*, to which end that ſmall Bone is placed, not unlike the *Petella* of the Knee and *Oſſa Seſamoidea* of the Feet; which is an elegant Mechaniſm in Nature. *Fig.* ix.

Du Verny, T. 5. F. 8.

Muſculus Stapidis.

This lies hid in a Bony Pipe, excavated in the *Os Petroſum*, almoſt at the Bottom of the *Timpanum*, whence it takes its Origin. It's Belly is big and Fleſhy, and ſuddenly forming a very thin Tendon, which Deſcends to its Inſertion at the Head of the *Stapes*. The Pipe, which contains the Belly of this Muſcle, is about the ſixth part of an Inch long, and is much larger then the *Foramen*, through which its Tendon Paſſes.

When this Acts, it draws the *Stapes* upwards to the *Foramen Ovale*.

The Order of Diſſection obliges us to Examine the Muſcles of the Os Hyoides *next, to which end the* Maſtoidei *muſt be raiſed on both ſides of the Neck; the one being Freed from its Origination, and left at its Inſertion; the other on the contrary may be raiſed from its Inſertion, and left at its Origin. This done, the Biventral Muſcles of the Lower Jaw may be obſerved in their whole Progreſs, wherein may be Noted, that They Deſcend from their Originiſations through the* Stylohyoides *to the* Os Hyoides, *where an* Annulus *is made on each ſide for the Tranſmiſſion of their middle Tendons; after which They reaſcend to their Implantations. Theſe being alſo Raiſed contrarywiſe like the above-mentioned* Maſtoidei, *and the Perforations of the* Stylohoidei *enlarged, thorow which each contrary end of Theſe muſt be drawn, leaving the one at its Origination, and the other at its Inſertion, till we come to Deſcribe the reſt of the Muſcles which move the Lower Jaw.*

CHAP.

CHAP. XIII.

Of the Muſcles of the Os Hyoides *or Bone of the Tongue.*

SInce the *Os Hyoides* is faſtned to the Tongue and *Larynx*, the Muſcles which move it ought to be eſteemed common to both. Authors Diſagree concerning their Number, [a] *Velaſius*, [b] *Columbus*, [c] *Spigelius*, *&c.* Deſcribe Four Pair, (*viz.*) *Sternohyoideum*, *Coracohyoideum*, *Stylohyoideum*, and *Geniohyoideum*. To theſe, the Accurate [d] *Falloppius* adds another Pair, which latter Anatomiſts call *Mylohyoideum*; the Invention of which, is Arrogated by *Riolan*, in his Animadverſions in *Caſpar Bauhins Theatrum Anatomicum*.

Lib. ii. *p.* xvii. *Lib.* v. *p.* xii. *Lib.* iv. *p.* vi. *Obſerv. natom.*

All theſe Muſcles of the *Os Hyoides* receive their Denominations, from their Originations and Inſertions.

d. T. *. F.* i. *F.*

Sternohyoideus.

This does not Ariſe from the Upper part of the *Sternum* (31), as Anatomiſts generally write, but from the Inter- *Fig* xvii.

Internal part of the *Clavicula* (14) next it, where its Origination is Broad and Fleſhy, and Aſcends directly over the *Sternothyreoideus* and *Larynx*, of an equal Breadth and Thickneſs, to its Inſertion at the *Baſis* of the Fore Bone of the *Os Hyoides*. (*S.S.*) *Fig.* xv *Fig.* i.

This with its Partner Acting, pulls the *Os Hyoides*, together with the Tongue and *Larynx*, directly downwards.

Ibid. GG. *Coracohyoideus.*

This does not Ariſe from the *Proceſſus Coracoides Scapulæ* (16), as Vulgar Anatomiſts pretend. It's Origination being Round and Fleſhy from the ſuperior *Coſta* of the *Scapula*, at the root of the ſaid Proceſs, whence, marching Obliquely under the *Maſtoideus*, it becomes Tendinous, but growing Fleſhy again, It's Inſerted into the *Baſis* of the Fore Bone of the *Hyois*, near the Implantation of the Former Muſcle. (*T.T.*) *Fig.* xv *Fig.* i.

This running under the *Maſtoideus* as on a *Trochlea*, it there becomes Tendinous, not unlike the *Digaſtricus* of the Lower Jaw, wherefore, This by

by ſome is alſo Called *Biventer*. When It Acts together with Its Partner, They do not only aſſiſt the Former in drawing the *Os Hyoides*, Tongue and *Larynx*, downwards; but, They alſo pull them ſomewhat Inwards, towards the *Vertebræ* of the Neck.

T. 15. *pne C.*

Stylohyoideus.

By ſome called *Styloceratohyoideus*, becauſe its ſaid to be Inſerted to the *Horns* of the *Os Hyoides*. It Ariſes ſharp and Fleſhy from the *Proceſſus Styloides* (*f*), and ſoon growing larger, It Deſcends obliquely Forwards to the *Os Hyoides*, in half its Progreſs thither, its Fleſhy Body is Divided, to give way to the Tranſmiſſion of the Middle Tendon of the *Digaſtricus* of the Lower Jaw. This Muſcle is well expreſt (*in ſitu*) by *Bidloo*. *Fig.* iii.

This with its Companions, the *Styloglofſus* and *Stylopharyngæus* Acting on each ſide, do draw up the *Os Hyoides*, Tongue and *Larynx*, together with the *Fauces* in Deglutition; whereby the Maſticated Aliment is not only Compreſt into the Latter, (they being then Dilated) but the *Epiglottis* is

Depreſs

Depreſt, and adequately covers the *Rimula* of the *Larynx* by its Aproximation to it, by which means the Deſcent of the leaſt Partof the Aliment into the *Aſpera Arteria* is Hindered; which Mechaniſm in Nature is indeed very Admirable.

Bid.T.15. F F.

Mylohyoideus.

Diſſertat. Anatom. Though *Falloppius* and his Followers make this a Pair of Muſcles, It ſeems not to be diviſible without apparent Violence. It poſſeſſes all that ſpace which is between the Lower Jaw and *Os Hyoides*; Ariſing Fleſhy from both ſides the Mandible (10) Internally near the *Dentes Molares* (*A*), whence Marching with a double order of Fleſhy Fibres, the outwardmoſt of which paſs directly to their Implantation in the *Os Hyoides*; and the Middle run Tranſverſly over the following Muſcles, being inſeparably joined to each other with a Middle Line, as is well expreſt by *Bidloo. T.15.* *Fig. x* *Fig. ii*

Beſides the Uſes commonly aſcribed to this Muſcle in moving the *Os Hyoides* Tongue, and *Larynx*, Upwards and Forwards, and to either ſide; its laſt

laſt Deſcribed Tranſverſe Order of Fibres have ſtill a further Uſe in Compreſſing the *Glandulæ Sublinguales* who lie immediately under them on each ſide: whereby they Haſten the Egreſs of the Spittle from the Inferior Salival Ducts into the Mouth. Hence it is we imploy theſe Muſcles (as in the Action of Deglutition) when we want *Saliva* to moiſten the Mouth: And in that Action alſo they ſupply it with freſh *Saliva* to join with thoſe Aliments where Maſtication is not required; which Artifice of Nature deſerves our Admiration.

M.T. 15. *l.* 2. *FF.*

Geniohyoideus.

This with its Partner are Short, Thick, and Fleſhy Muſcles, Ariſing from the Internal parts of the Lower Jaw-Bone called the Chin (*A*), and Dilating themſelves, are ſoon leſſened again, and Inſerted to the ſuperior part of the Fore-Bone of the *Os Hyoides*. *Fig.* iii.

Theſe Acting pull the *Os Hyoides*, *&c.* both Upwards and Forwards, and aſſiſt the *Genioglosſi* in thruſting the Tongue out of the Mouth; of which in the following Chapter.

All

All theſe Muſcles of the Os Hyoides *being raiſed from their Originations, and left at their Inſertions, the whole Bone together with them may be taken out; by dividing its two extreams from the Two Proceſſes of the Scutiformal Cartilage, and cutting off the Originations of the* Ceratogloſſi *and* Hyothyroeidei, (*of which hereafter*). *This done they may be expanded on a Plain, as they are repreſented by* Placentinus *and* Veſlingius *in their Figures; the latter of which calls the laſt Deſcribed* Geneiohyoides, *and the preceding* Geneiohyoides par internum.

Caſſer. Lib. ii. *Syntag. Anatom. Cap.* xi.

CHAP. XIV.

Of the Muſcles of the Tongue.

AUthors aſſign various Numbers of Muſcles to this Part. *S*ome reckoning Eight, others Nine, ſome Ten, and others Eleven, amongſt which they count the Tongue it ſelf; with whom we ſhall not enter the Liſt, contenting our ſelves at preſent with their Deſcriptions only, as they have appeared to us in Diſſection.

N. Theſe

N. Theſe Muſcles of the Tongue, like thoſe of the *Os Hyoides*, are named from their Originations and Inſertions.

The Adminiſtrations of Theſe is not Difficult, provided the Muſcles of *Os Hyoides* are carefully Diſſected.

Genioglossus.

This with its Partner lies immediately under the Deſcribed *Geniohyoidei.* They Ariſe Fleſhy from the Fore-part of the Lower Jaw Internally (*A*), and *Fig.* iii. inlarging themſelves, are inſerted to the root of the Tongue. (*DD.*) *Fig.* v.

When theſe Act they pull the Tongue Forwards, and Thruſt it out of the Mouth.

Ceratogloſſus.

This we cut from its Broad Fleſhy Origination at the ſuperior part of the *Os Hyoides* laterally, whence it Aſcends to its Inſertion at the Root of the Tongue. (*C C.*) *Fig.* v.

This with its Partner Acting draw the Tongue into the Mouth directly; if One of them Acts only, it moves it to one ſide.

Sty-

Styloglosſus.

This Ariſes Sharp and Fleſhy from the *Proceſſus Styloides* (*f*), whence Fig. iii Deſcending Obliquely Forwards its Inſerted to the root of the Tongue immediately below the Implantation of the Former. (*E E.*) Fig. v

This Pulls the Tongue Up and Inwards in the Action of Deglutition, as before noted.

☞ To theſe moſt Authors except *Falloppius* add the *Baſiogloſſus*, by ſome called *Hypſilogloſſus*, Ariſing from the *Os Hyoides*, and Inſerted to the Tongue, but whether there be ſuch a Muſcle our late Enquirers have not acquainted Us.

CHAP. XV.

Of the Muſcles of the Larynx.

THeſe Muſcles of the *Larynx* are generally divided into *Common* and *Proper*.

The *Common* Ariſe from other Parts, and are Inſerted to it, concerning which

which, *Galen* and the Antient Anatomists erred in their Accounts; reckoning Three Pair, of which the *Oesophagiæus* is esteemed as One: But this Mistake is Corrected by *Aquapendendente*; It being but One single Muscle, and belonging to the *Gula*, wherefore these are reckoned to be Two Pair only; (*viz.*) *Sternothyroideum* and *Hyothyroideum*.

Lar. p. viii.

The *Proper* Muscles of this Part are such whose Rise and Termination are Confined to the Cartilages themselves. *Falloppius* and *Aquapendente* have both employed themselves in their Investigation: The First rectified the Ancient *System*, the Latter accurately Expresst them in his Figures. These are Four Pair, besides one single Muscle, (*viz.*) *Cricothyroideum*, *Cricoarytænoideum posticum*, *Cricoarytænoideum laterale*, *Thyroarytænoideum* and *Arytænoideus*.

servat. natom.

N. B. That all these Muscles of the *Larynx* (like those Treated of in the Two precedent Chapters) have their Denominations from their Originations and Insertions.

Bid.T.15. F.i.HH.

Sternothyroideus.

This Ariſes Broad and Fleſhy from the Upper and Internal part of the *Sternum*,(31) whence Aſcending on the ſides of the Wind-pipe over the *Glandulæ Thyroidei*, it's Inſerted to the Inferior part of the Thyroidal or Scutiformal Cartilage. This with its Partner Pulls the *Larynx* Downwards, and lengthens the *Canalis* or Diſtance between the *Rimula* and Tip of the Tongue, (which latter we take to be the true *Plectrum Vocis*) whereby the Tone of the Voice is rendred Grave. *Fig* xvii

Hieron. Fab. ab Aquapen. De Lary. F. 23. n. 34. N.

Hyothyroideus.

This Ariſes Fleſhy from the inferior part of the *Os Hyoides* laterally, oppoſite to the Origination of the *Ceratogloſſus*, and Deſcends directly to the lower part of the Scutiformal Cartilage near the Implantation of the Former.

This with its Fellow draw the *Larynx* upwards in an Acute Tone of the Voice; the Canale of the *Aſpera Arteria* being alſo ſtreightened thereby.

We

We proceed next to the *Proper* Muſcles of the *Larynx*.

In the Adminiſtration of Theſe, the Muſculus Oeſophagiœus *muſt be freed from both ſides the Scutiformal Cartilage, and the Arytenoidal Cartilages divided from the* Glottis, *and the* Aſpera Arteria *alſo ſeparated from the* Gula : *Cut off the Former near the* Bronchia, *and the Diſſection of the ſubſequent Muſcles will be the better performed.*

Idem. F. 26. R R.

Cricothyroideus.

This is ſeated on the Forepart of the *Larynx*, and is a Short Thin Fleſhy Muſcle : Ariſing from the Forepart of the *Cricoides*, whence marching obliquely, is ſoon Inſerted to the *Scutiformis* internally laterally.

[a] *De Muſc. Cap.* xii. [b] *Lib.* ii. *Cap.* xxi. This by [a] *Galen* and [b] *Veſalius* is made Two Muſcles ; but in ſeparating the Inferior proceſſes of the Scutiformal Cartilage from the *Anularis*, you will find but One on each ſide, ſays *Aquapendente* :* The Origination and Inſertion of which is ſuppoſed by ſome to be *e contrario*, and that its Uſe is rather to pull up the *Anularis* than to bring

Fabrit. De Laryn. C. viii.

down the *Scutiformis* nearer it; but the Controverſy (we think) is of no moment, ſince all Muſcles move the Parts leſs Stable to thoſe more Fixt, as is Inſtanced in the *Recti Abdominis* after *Spigelius*. *Chap.* i. *pag.* 26.

Aquapenden. F. 25. *S S.* 38. *S.*

Cricoarytænoideus poſticus.

This lies on the back part of the *Larynx*, and is of a quadrangular Figure. It Ariſes from the Poſterior part of the Anular Cartilage, filling a ſhallow depreſure of it with Fibres aſcending Obliquely outwards, to their Inſertion at the lowermoſt part of the Arytenoidal Cartilage.

This with its Partner ſerve for the Apertion of the *Rimula*; which will plainly appear, if with your Knife you repreſs this Muſcle, the Arytænoidal Cartilage will then be opened thereby.

Id. F. 24. 32. 33. *V.*

Cricoarytænoides lateralis.

This is a ſmall, ſhort, Fleſhy Muſcle, Ariſing from the *Cartilago Cricoides* laterally, and Aſcending obliquely is Inſerted to the Arytenoidal Cartilage near

near the Implantation of the Former Muſcle.

This pulls the *Arytænois* ſideways, and thereby opens the *Rimula.*

Aquapen. 24. *M.* 32. 33. xxx.

Thyroarytænoideus.

This is the largeſt of all the Proper Muſcles of the *Larynx.* It Ariſeth together with its Partner in the Internal and Concave part of the Scutiformal Cartilage, from whence they Aſcend to their Implantations at the Foreparts of the *Arytænoides.*

When theſe Act, they approach the Cartilages to which they are Fixed, and ſhut the *Rimula.* The Contraction of theſe Muſcles through an Inflamation in an *Angina* will bring ſudden Death, which Caſe I remember I heard the late Dr. *Croon* ſay he had once Obſerved in Diſſection.

Id. F. 25. 38. *T.*

Arytænoideus.

This is the ſmalleſt Muſcle belonging to the *Larynx,* it's in the Opinion of ſome Double, but has always appeared to us Single. It Ariſes from the External part of one of the Ary-

tenoidal Cartilages, and running Tranſverſly, is Inſerted to the other.

This pulls the Arytenoidal Cartilages nearer each other, and ſhuts the *Rimula* Adequately.

Book v. *Chap.* xi. The Opinion of Dr. *Croon* (as it's related by Dr. *Gibſon*) concerning the Uſe of theſe Muſcles, we can by no means Approve.

CHAP. XVI.

Of the Muſcles of the Fauces.

Animad. in Spigel. & Veſlin. *Riolan* not only pretends to the Invention of theſe Muſcles, but aſſumes the Diſcovery alſo of thoſe of the *Gargareon*, though they were moſt Accurately Deſcribed before him by *Falloppius* under the general Title of the Muſcles of the *Fauces*. Neither *Veſalius* nor *Columbus* mentions Theſe, or thoſe of the *Gargareon*, though the Former are partly deſcribed by *Galen*, *Oribaſius*, and *Avicenna*, as * *Laurentius* obſerves. Latter Writers have followed the Erroneous Syſtem of *Riolan*, who, as I am apt to think, either took *Falloppius* his Account upon Truſt,

Obſervat. Anatom.

* *Hiſtor. Anatom. Lib.* v. *Cap.* ix.

Truſt, or was not willing to diminiſh his Number of thoſe belonging to the *Fauces*, leſt it might appear Thoſe of the *Gargarion* were alſo Deſcribed by him. Finding the Hiſtory of theſe Muſcles ſo confuſed, We thought it neceſſary to give a Figure of them to render our Account more Intelligible. *Fig.* vi.

Stylopharyngeus.

This has a Round, Sharp, and Fleſhy Origination at the root of the *Proceſſus Styloides*, (with the above treated *Styloglosſus*) whence deſcending obliquely, it expands it ſelf at its Termination on the Internal Glandulous Membrane of the *Fauces*, in the middle of which its joined with its Partner. (*AA.*) *Fig.* vi.

Theſe Acting draw the *Fauces* upwards, and Dilate Them in order to receive the Maſticated Aliment in *Deglutition*.

Theſe being Cut from their Originations, the next that offer themſelves to the Knife are thoſe which faſten this Part to the *Baſis* of the *Cranium*, which according to *Riolan* and others conſiſt of Two Pair of Muſcles; but to us rather ſeem to be but one Muſcle

Anthrop. Lib. v. *Cap.* xix.

with Two Fleſhy Beginnings ſpringing from the *Proceſſus Pterigoidei*, wherefore we Call it *Pterigopharyngeus*.

Pterigopharyngeus.

This Ariſes Thin and Fleſhy from both Pterigoidal proceſſes of the *Os Cuneiforme*, alſo from the Root of the Tongue and extremities of the *Os Hyoides*; from theſe Places its Fleſhy Fibres run in a ſemicircular manner, embracing the ſuperior and Back part of the Glandulous Membrane of the *Fauces*, where they meet in a middle line. (*B B.*) *Fig.* vi.

When this Muſcle Acts it brings the Middle or Back part of the *Fauces* towards a Plain, by which means, the *Tonſilæ*, together with the reſt of the Glandules, are Compreſt in the Evacuation of their *Mucus*, to join with the Aliment in its Deſcent into the *Stomach* in *Deglutition*. And at other times to promote *Screation*, in which This Muſcle is the chief Inſtrument; That the *Tonſilæ* approach towards each other, is Obſervable when we Inſpect theſe Parts in living Perſons.

Oeſo-

Oesophageæus seu Sphincter Gulæ.

This seems to be a continuation of the Former; Arising from each side the Scutiformal Cartilage, and like it passes to a Middle line on the Back part of the *Fauces.* (*C. C.*) *Fig.* vi.

This does not only assist the Former in Compressing the Masticated Aliment into the *Gula*, but is thought by some to streighten the *Scutiformis*, and render the Tone of the Voice more Acute.

To these may be added the Perforated Muscle of the *Gula*, as Dr. *Willis* calls it.

Vaginalis Gulæ.

Steno supposes this to consist of a double order of spiral Fibres mutually intercussating each other. Dr. *Willis* says the whole *Oesophagus* seems to consist of Two Muscles, which make Four Parallelograms with their opposite Fibres decussating each other. But in Man we find it far otherwise, in whom the Fibres of this Muscle are Longitudinal, and Oblique; the Former

Parma. Rational. Co. ii. Sect. ii.

mer ſeem to take their Original at the Arytenoidal Cartilages, and paſſing ſomewhat Obliquely to the Back part of the *Oeſophagus* (*BB*), deſcend to the Stomach: The Latter (*AA*) ſeem to be a continuation of the *laſt treated of Muſcles*, deſcending obliquely in a ſpiral manner not unlike thoſe of the Inteſtines Deſcribed by the Learned Dr. *Cole*.

Fig. v

Diſſertat. in Lib. de Febribus intermittentibus.

CHAP. XVII.

Of the Muſcles of the Gargareon.

THeſe were Firſt Deſcribed by *Falloppius*, as was above noted, amongſt thoſe of the *Fauces*. *Riolan* Firſt Aſcribed Them to this Part, and Gave Them the Names of *Pterigoſtaphylinus Internus* and *Externus*, which Appellations not pleaſing the late Dr. *Croon*, (to whoſe Memory we ſhall ever pay a Juſt Defferance for his generous Encouragement of our Young Endeavours) he changed them for that of *Sphænopalatinus*, and *Pterigopalatinus*, or *Sphænopterigopalatinus*; for which Reaſon he has been Vulgarly Reput-

[a] *Obſerv. Anatom.*
[b] *Anthropog. Lib.* v. C. xx.

In his Learned Lectures in Surgeons Hall.

ed

ed Their First Discoverer. Neither did he propose a Third Pair, as Dr. *Gibson* conceives.

Sphænopalatinus.

This descends from a Round Fleshy Origination at a Process of the *Os Sphænoides* (*X*), which is in a Direct Line between the *Ala Vespertilionis* (*P*), and *Processus Styloides* (*f*), becoming a Round Fleshy Belly, in half its Progress grows less again near its lateral Insertion to the Posterior part of the *Gargareon*. *Fig.* iii.

This with its Partner Acting Draw the *Gargareon* with the *Vuula* Upwards and Backwards; which hinders the Masticated Aliment from Regurgitateing through the *Foramina Narium* in *Deglutition*.

Pterigopalatinus seu Sphænopterigopalatinus.

The Former Appellation intimating its Progress and Insertion; the Latter its Origin also. This Arises from the same Process of the *Os Sphænoides*, as the Preceding Muscle, and like it, Descends

Deſcends according to the length of the Interſtice made by the Internal *Ala* of the *Os Sphænoides* and *Muſculus Pterigoideus Internus* (*B*) of the Lower Jaw; and becoming Tendinous, marches over the *Proceſſus Pterigoides*, and is Inſerted to the Forepart of the *Gargareon*. Fig.

The Tendon of This, paſſes over the Pterigoidal Proceſs, which like a Pully gives It a Different Power from that of the Former Muſcle, though they have both their Origin from the ſame Place. Wherefore, contrary to the Preceding. This Draws the *Gargareon* Forwards and Downwards; which Contrivance in Nature is no leſs remarkable than any of thoſe where the like Artifice of a *Trochlea* is made Uſe of.

N. *Now all the Muſcles of the Lower Jaw may be Diſſected; its* Depreſſors *being left at Their reſpective Originations and Inſertions, as before,* Chap. XII. Page 72.

CHAP.

CHAP. XVIII.

Of the Muscles of the Lower Jaw.

Muſ. vii. ii. xv. [a] *Galen*, [b] *Veſalius*, and other Anatomiſts Deſcribe Four Pair of Muſcles belonging to the Lower Jaw, (*viz.*) *Temporales*, *Maſſeteres*, *Digaſtrici*, and *Pterigoidei*. To Theſe *Falloppius* adds a Fifth by later Authors called *Pterigoidei Externi*. And *Riolan* a ſixth the *Quadratus Genæ*, by him named *Muſculus Latus*, already deſcribed Ch. X.

Temporalis it. *Crotaphites.* *Fig.* i. L.

This has a large Semicircular Fleſhy Beginning, from part of the *Os Frontis* (2), *Syncipitis* (1), *Sphænoides*, and *Temporalis* (3), from theſe places its Fibres paſs (like Lines drawn from a Circumference to a Center) under the *Os Jugale* (9), from whence alſo Ariſe ſome Fleſhy Fibres joining with the Former at their United, partly Tendinous and partly Fleſhy Inſertion, to the Upper part of the *Proceſſus Corone* of the Lower Jaw. (*B.*) *Fig.* xvii. *Fig.* iv.

This

This with its Partner draws the Lower Jaw upwards. We could never Obſerve thoſe Dreadful Symptoms Authors Relate in Wounds of this Muſcle, though part of it has been Divided to Apply the *Trepan* in Fractures of the *Cranium*.

Maſſeter.

This is a ſhort, Thick, partly Fleſhy, and partly Tendinous Muſcle; Ariſing Forwards from the *Os Primum Maxillæ ſuperioris* (6) Backwards from the *Os Jugale* (9), from hence Deſcending (with Fibres, decuſſating each other in Acute Angles) is Inſerted to the Inferior and External part of the Lower Jaw Bone. *Fig.*

This Aſſiſts the Former in its Office. The *Ductus Salivalis Superior* paſſing over this Muſcle, is a Provident Contrivance in Nature to Accellerate the Motion of *Saliva* in Maſtication. The next which offers it ſelf to our Conſideration is the *Digaſtricus*, by ſome called *Graphoideus*, imagining it to Ariſe from the Styloidal Proceſs.

Di-

Digaſtricus ſeu Biventer.

So called from its peculiar conformation, having Two Bellies. It Ariſes Fleſhy from the Forepart of the *Proceſſus Maſtoides* (8), whence Deſcending it becomes Tendinous, paſſing through the *Stylohoideus* and an Annular Ligament laterally faſtned to the *Os Hyoides*; from which Bone ſome Tendinous Fibres do Ariſe and join with its Second Fleſhy Belly, Aſcending from thence to its Inſertion at the Middle of the Inferior part of the Lower Jaw. The Middle Tendon of this Muſcle and its Partner paſſing through Two Annular Ligaments Fixt to the *Os Hyoides*, as Ropes through a Double Pully is a Wonderful contrivance of the Author of Nature to render them capable of Pulling the Lower Jaw Down, which had their Progreſs been Direct from their Originations, they could not have performed. Nor is there any Proceſſes whether of the *Vertebræ* of the Neck, or the Neighbouring Parts, that could give an Origination to theſe Muſcles, below their Inſertions, as in ſome *Quadrupeds*; Where- *Fig.* xviii. *Fig.* iii. *G.*

Wherefore the Divine Architect of Human Bodies has placed this Double Pully below their Terminations, whereby they Perform their deſigned Office. Hence *Deglutition* is hindered, when theſe Muſcles are in action, they then preventing the Aſcent of the Tongue and *Larynx*. Neither can we at that time draw the Lower Jaw down becauſe *the Center of direction* is pulled upwards. Wherefore we are obliged on that occaſion to keep the Jaws cloſe together. But in Dogs and other Voracious Animals who have theſe Muſcles Ariſing from the Tranſverſe Proceſſes of the Firſt *Vertebra* of the Neck, theſe Actions are not Dependent; whence it is they devour their Aliment ſo Quick.

Pterigoideus Internus.

So called from its Origin and Situation. It Ariſes partly Tendinous and partly Fleſhy from the *Proceſſus Pterygoides* or *Aliformis* of the *Os Sphænoides*, whence it Deſcends to its Implantation at the Internal and Inferior part of the Lower Jaw Oppoſite to the Termination of the *Maſſeter*. (*B.*) *Fig.* ii

Either

Either of these Acting draws the Jaw to the Contrary side, if Both Act they assist the *Temporales* and *Masseteres.*

N. *To discover the Following Muscle the Two last Named on either side must be removed. But if you still desire a fairer Prospect of it, with a Chissel Cut off part of the* Processus Corone, *together with the* Os Jugale.

Pterigoideus Externus.

This like the Former receives its Name from its Situation and Origin: It Arising from the External Part of the said *Processus Pterigoides,* (*P*) and superior part of the *Os Sphænoides* (*C*) seated in the cavity of the Temples opposite to the *Os Jugale* (9), and runs Backwards to its Insertion at the Neck of the *Processus Condyloides* (*AA*) of the Lower Jaw. *Fig.* iii. *Fig.* xvii. *Fig.* iii. *E.* *Fig.* iv.

When This and its Partner Act, They draw the Lower Jaw Forwards, and Force the Teeth of the Inferior Jaw beyond those of the Superior, as *Falloppius* their first Describer observes.

ſervat. natom.

CHAP. XIX.

Of the Muſcles of the Thorax.

TO this Part Two Movements may be aſcribed. The Firſt of the Whole Cheſt with its Contents on the *Vertebræ* of the Back. The other of the Parts which circumſcribe its Cavity (*viz.*) the Ribs, by whoſe ſucceſſive Elevation and Depreſſion the included ſpace is inlarged or diminiſht. This Conſtant Viciſſitude is neceſſary for the great Work of Reſpiration, without which no Animal Body can ſubſiſt. The Muſcles or Inſtruments of its Motion are diſtinguiſht into *Proper* and *Common*.

The *Proper* are ſuch as are peculiar to it, and have their Riſe and Termination confined within the Limits of the *Thorax*.

The *Common*, are ſuch, which tho' they regard the adjacent Parts, yet chiefly reſpect This; of Theſe, ſome are Principal Inſerted here, and immediately moving This, together with Thoſe Parts from which they are derived

derived; Others are Auxiliary, and only move the Contiguous Bodies, whose subordinate Actions Contribute to the better performing the Grand Motion. Thus the Elevation of the *Scapulæ* is required in Ordinary Respiration, without which, the *Serrati* could not Act. Thus in Asmatic Persons, Peripneumonies, Pleurisies, or other Cases, where these Parts are Inflamed or Obstructed in the due Execution of their Office; the Extension of the *Vertebræ* of the Neck becomes necessary for the Introsusception of Air through the *Aspera Arteria* and Repletion of the *Vesiculæ* of the Lungs.

Of the Muscles *Proper* to the *Thorax* which appear on the Fore Part, [a] *Riolan*, [b] *Caspar Bauhin*, and others reckon Three Pair (*viz.*) *Subclavius*, *Serratus Major anticus*, and *Triangularis*, to which [c] *Falloppius* adds six more (*viz.*) three on each side, by us called *Scalenus Primus*, *Secundus*, and *Tertius*; But in our Distribution we shall rather place the two First together with the Three Last among the Muscles *common* to This and the Neighbouring Parts, and add the *Intercostales* to the *Triangularis*, which together are

[a] *Anthro. lib.* v. *cap.* xxxi.
[b] *Theat. Anatom. Lib.* iv. *Cap.* vi.
[c] *Observ. Anatom.*

all the *Proper* Muſcles ſeated before.

Bid. Tab. 26. F. i. C C. A A.

Intercoſtales externi & Interni.

Theſe are placed in the Intervals of the Ribs as their Names Declare. Their Number on each ſide is Twice Eleven, equal to the Number of the *Interſtices* in which they are lodged. Their Originations are differently aſſigned by Anatomiſts, but we ſhall acquieſce in the Opinion of Dr. *Muyow* (after *Steno*) who thinks both (*viz.*) *Intercoſtales Externi*, and *Interni*, do Ariſe from the Lower Edge of each Superior Rib, and are inſerted to the Upper edge of each Inferior one. Theſe are Thin and Fleſhy; the Fibres of the External paſs from above Obliquely downwards to the Fore part or *Oſſa Pubis* (38): Thoſe of the Internal, *Fig.* xvi deſcend in like manner obliquely towards the Back-part or *Os Sacrum* (*O*): *Fig.* xvi Their Fibres Decuſſating each other like the Letter *X*.

The Sternum *being raiſed by dividing its Cartilages on each ſide from the Bony endings of the Ribs, the following Muſcle will appear underneath.* *Trian-*

id. Tab.
. F. i.
B.

Triangularis.

This with its Partner lies on each side the *Cartilago Enſiformis* (32) within the Cavity of the *Thorax* under the *Sternum* (*I*); ſome times this appears to be Three, at other times Four diſtinct Muſcles on each ſide. It Ariſes from the Inferior part of the *Os Pectoris*, whence its Upper part Aſcends, and Lower Deſcends to its Implantations at the Bony endings of the Fourth, Fifth, Sixth, and ſometimes Seventh, and Eighth Ribs, near their Conjunctions with their Cartilages. *Fig.* xvii. *Fig.* xviii.

Its reputed Uſe by moſt (if not all) Anatomiſts, is to Contract the Breaſt.

The ſecond Order of Muſcles (*viz.*) ſuch which move the *Thorax* in Common with the Contiguous Parts to which They are affixt; Comprehends the three *Scaleni*, two *Serrati Antici*, *Subclavius*, and *Diaphragma*.

eſal. M.
. 8. C.

Scalenus primus.

This Ariſes Fleſhy from the Forepart of the Second, Third, and Fourth Tranſverſe Proceſſes of the *Vertebræ*

of the Neck (*nn*); and Deſcending Obliquely Forwards, becomes Tendinous at its Inſertion to the Firſt Rib (*i*); The Axiliary Nerves paſs between This and the Following Muſcle. *Fig.* xviii *Fig.* xvii

Its Uſe is to draw the ſuperior Rib together with the reſt Upwards in Inſpiration.

Veſal. M. T. 14. *M.*

Scalenus Secundus.

This ſprings Fleſhy from the Second, Third, Fourth and Fifth Tranſverſe Proceſſes of the *Vertebræ* of the Neck (*nn*), laterally (like the Former); in its Deſcent it becomes Thin, and Tendinous, marching over the Firſt Rib to its Inſertion in the Second and ſometimes to the Third. *Fig.* xviii

Idem M.

Scalenus Tertius.

This has its Beginning near the Former, from the ſame Tranſverſe Proceſſes of the *Vertebræ* of the Neck; as alſo from the Fifth and Sixth of thoſe Proceſſes, and is ſoon Inſerted to the Firſt Rib.

These Three last Treated of Muscles are called *Scaleni* from their Figure, having three unequal sides. Though they are most commonly Enumerated and Described among those of the Neck, to whose Motion they are subservient, yet the Judicious *Falloppius* duely considering the *Subclavius* and *Serratus Superior Posticus* to be insufficient for the Elevation of the Chest, assigns These part of that Office.

bservat. natom.

Subclavius.

nd. T. 5. . Spig. . 18.

ib. 4. F.

This next presents it self to the Knife. It Arises Fleshy from the Inferior part of half the *Clavicula* (14), next its connection with the *Spina Scapulæ* (15), hence its Fibres Descend Obliquely Forwards to its Insertion at the superior part of the First Rib (*i*) near the *Sternum*. Its Use is intimated above; but *Spigelius* who has written a Chapter expresly about this Muscle, pretends it Depresses the *Clavicula*, for which Opinion he Argues strenuously, and to this purpose relates an Observation from *Hippocrates*, that when the *Clavicula* is Fractured near the *Sternum* that next part visibly

Fig. xvii.

Lib. iv. *Cap.* ix.

Aſcends, and that part next the *Scapula*, together with the *Humerus*, falls down; but if it's Fractured near the *Scapula*, then neither part Riſes; which, as our Author not abſurdly Conjectures, to depend on the Termination of this Muſcle. In the firſt Caſe, it draws the *Clavicula*, together with the *Humerus* downwards, the Fracture being betwixt its Inſertion and the contrary end of the Bone that is fixt to the *Sternum*. In the Latter, it being Fractured on that part where its Inſerted it may draw the ends of the Bone nearer each other.

Veſal. M. T. 5. F: id. T. 4. K.

Serratus Minor Anticus.

Anatomiſts generally reckon this Muſcle amongſt thoſe of the *Scapula*; but we are perſuaded from its Poſition that it may be equally ſerviceable to the *Thorax*, in Elevating thoſe Ribs it is Inſerted to: Wherefore we offer it Indifferently, whether belonging to one, or the other; but chuſe to Inſert it in this place, becauſe it now appears in *Situ*. If due Care be not taken in raiſing the *Pectoralis*, you will be in danger of Wounding this. It Ariſes

Fleſhy

Fleshy from the Processus *Coracoides Scapulæ* (16), and Descends Obliquely Forwards, becoming Broader and Thinner, and is Inserted Fleshy to the Bony part of the Second (*k*), Third (*l*), Fourth (*m*), and Fifth Ribs (*n*). If the *Scapulæ* are Elevated by their Proper Muscles, This with its Partner are then capable of Dilating the Breast in Large Inspirations. But if they are Depress't, it may be easily conceived with what Difficulty that Action must then be Performed. *Fig.* xvii.

d. T.
000.

Serratus Major Anticus.

This Arises Fleshy from the whole *Basis Scapulæ*, and Passing under the *Subscapularis* it becomes Broader and Thicker, still running somewhat Forwards till its Inserted to the Eight superior Ribs laterally (*i k l m n o p q*) by so many Distinct Fleshy portions or *Digituli*, representing the Teeth of of a Saw; The Two and sometimes Three Inferior of which are Indented with the *Obliquus Descendens* of the *Abdomen*, as was before noted. This like the Former Dilates the *Thorax*, or Moves the *Scapulæ* Forwards and *Fig.* xvii.

Down-

Downwards when its Muſcles are relaxt.

The next Muſcle belonging to the *Thorax*, and appears as the Body lies Supine, is the *Diaphragm*. We ſhall not here enumerate the many Names beſtowed on this Part, our Task being only at Preſent to conſider it as a ſingular Muſcle elegantly Framed for thoſe Uſes for which the Author of Nature has deſign'd it.

Bid.T.52. B C D E F G H.

Diaphragma.

[a] *Steno* ſuppoſes this to be a Digaſtric Muſcle. [b] *Caſpar Bartholin* conceiving it Double, calls the Lower part ſpringing from the *Vertebræ* of the Back and Loins the *Muſculus Inferior*, and the Oppoſite Ariſing from the Cartilaginous Endings of the Ribs, the *Superior*: or Imagines it Trigaſtrical, as above noted *Chap.* I. Which latter Opinion of his ſeems to quadrate to this Part in Birds. But whether we may ſuppoſe it One or Two Muſcles in Man, is a matter more of Controverſy then Uſe. Its Inferior part Ariſes partly Tendinous and partly Fleſhy on the Right, from the

[a] *Specim. Myologiæ.*
[b] *Diaphr. Structur. Cap.* ii.

First

First (*u*), Second (*w*) and Third *Vertebræ* of the Loins (*x*); on the Left from the Last, and Last but one of the Back, hence Ascending with Fleshy Fibres on each side running Streight, but in the middle pass somewhat Curvedly, intersecting each other do as it were embrace the *Oesophagus*, after which they become Tendinous, and join with its Upper part, which Arises Thin and Membranous, but soon grows Fleshy at the whole Inferior Margin of the Cartilaginous endings of the Ribs, and lower part of the *Os Pectoris*; whence, its Fleshy Fibres like Lines drawn from a Circumference towards a Center, pass to its Middle part, where its Tendinous Fibres are Intercussated with each other, and exhibit a *Rete*. It has Two large Perforations, the One in its Tendinous part to Transmit the *Vena Cava* towards the Right Auricle of the Heart; the other in its Fleshy part, which like an *Anulus* embraces the *Oesophagus* (as above noted). Its double Origin at the *Vertebræ* (34) gives way to the Descending Trunck of the *Arteria Magna*, and Two Ascending of the *Ductus Chyliferus* and *Vena Azygos*. Its

Fig. xvii.

Fig. xvii.

Its Uſe in the Animal Oeconomy is too Large to be Inſerted in this place. *Pecquet* obſerves when all the Muſcles of Reſpiration are ſeparated and removed, the *Diaphragma* and *Intercoſtales* excepted, the Animal ſtill perſiſts to Breath. When we Inſpire, its ſuperior ſurface comes towards a Plain. In Expiration it's Convext towards the *Thorax*, and Concave towards the *Abdomen*. In the Former the *Viſcera* of the Lower Belly are Compreſt, and the Cavity of the *Thorax* enlarged. In the Latter the Air is expreſt out of the *Veſcicule* of the Lungs.

We might here Inſert another ſingular Muſcle the Heart, but it not being an Inſtrument of Voluntary Motion, or moving any other Part beſides it ſelf and the Blood, we ſhall therefore leave it, being ſufficiently ſenſible how Accurately Dr. *Lower*, *Vieuſenius*, and Others have Deſcribed and repreſented it in their Figures. The reſt of the Muſcles that appear on the Body lying Supine, do partly belong to the Head, Neck, and Limbs, of which in their Proper Order.

N. *To Profecute our Work We muft now lay the Subject in a Prone Pofition the Back Uppermoft, continuing our Section from the* Occiput *down to the* Os Sacrum, *Interfecting it with a Tranfverfe Line over the* Regio Lumbalis. *Which done, and the Common Integuments removed, the Subjacent Mufcles may be beft Diffected in the following Order.*

CHAP. XX.

Of the Mufcles of the Scapula *or Shoulder-Blade.*

THefe Mufcles Conftitute the Third Order of thofe belonging to the *Thorax*. The Reafon of this Divifion may be feen before. *pag.* 98 and 99.

l. M. E K,

Cucullaris, & Trapezius.

So named becaufe this with its Fellow covering the Back Repreſents a Cowl. It Ariſes Fleſhy from the *Os Occipitis* (2), Tendinous from the *Ligamentum Colli*, and *Apex* of the Spine of the laſt *Vertebra* of the Neck (*f*), *Fig.* xviii.

and

and Eight ſuperior of the *Thorax* (*PP*), from which Broad Origination becoming Thick and Fleſhy, its ſo Inſerted to the *Clavicula* (11), and Tendinous to the *Spina Scapulæ* (16), Each Muſcle is Triangular, and both conjointly compoſe a Lozenge or *Trapezium*, whoſe large Diameter extends from the *Occiput* to the Fifteenth *Vertebra*; the ſhorter from near the Extremity of the *Spina Scapulæ* on one ſide, to that of the other. They contain a Triple Series of Fibres; the Middle paſſing directly Tranſverſe from the Firſt *Vertebra* of the *Thorax*: thoſe Above Deſcend, and thoſe beneath Aſcend to their Inſertion; whereby the *Scapula* is variouſly moved according to their Directions, either Obliquely Upward, Directly Back, or Obliquely Downwards. *Fig. X*

N. *You muſt proceed with Caution in the ſeparation of this Muſcle, leaſt you Raiſe the following with it, which adheres very ſtrictly to its Tendinous part, where it ſprings from the Superiour Spines of the* Vertebræ Thoracis.

Rhom-

G.
H. K.

Rhomboides.

So called from its Figure. It lies immediately under the Former, in ſome Subjects we have found it divided into Two diſtinct Muſcles on each ſide, which *Bidloo* alſo obſerves. It Ariſes Tendinous from the Two Inferiour Spines of the *Vertebræ* of the Neck (*e f*), and Four Superior of the *Thorax* (*PP*), whence deſcending Obliquely, becomes Thick and Fleſhy, and is ſo Inſerted to the whole *Baſis Scapulæ* (13, 13). *Fi.* xviii.

When it Acts, it draws the *Scapula* Upwards and Backwards.

N. *This adheres ſtrictly to its Subjacent Muſcle the* Serratus Superior Poſticus, *wherefore you muſt be cautious in Raiſing it.*

K. C.

Levator Scapulæ.

By ſome called *Levator Patientiæ*, becauſe we make uſe of it in large Inſpirations, in order to Expire, as when we Sigh, (as they call it.) This lies immediately under the *Cucullaris*, ariſing by ſo many ſeparate Originations from the Second, Third, Fourth, and

and Fifth Tranſverſe Proceſſes of the *Vertebræ* of the Neck (*nn*), which uniting into one large Fleſhy Body, Deſcends Obliquely to its Inſertion at the Superior Angle of the *Scapula* (13). Its Name declares its Office. Fi. xv.

N. *We proceed next to the Muſcles of the* Thorax *which appear on the Backſide, the Body lying Prone; to diſcover which, the* Latiſſimus Dorſi *muſt be removed, part of it being raiſed in the* Ilia *in Diſſecting the Muſcles of the* Abdomen, *where you muſt purſue its Separation, firſt Cutting it from the Poſteriour part of the Spine of the* Ilium (30), *ſeparating it (if poſſible) from the* Serratus Inferior Poſticus; *Freeing it from the Spines of the Loins (RR), and Inferiour of the* Thorax (*PP*), *and leave it at its Inſertion to the* Os Humeri (19). *This done on both ſides, the reſt of the Muſcles of Reſpiration offer themſelves.*

CHAP.

CHAP. XXI.

Of the Muscles of the Thorax, *which Appear, the Body Lying Prone.*

THose of the Fore-part we examined, *Chap.* XVIII. the same Order we shall here Observe. First therefore of the *Proper* Muscles relating to this Part.

Val. M. T. I. F.

Serratus superior posticus.

This lies immediately under the *Rhomboides*, as above noted. It Arises with a Thin Tendon from the Two Inferior Spines of the *Vertebræ* of the Neck (*f g*), and Three superior of the *Thorax* (*P P*), from thence Descending Obliquely over the *Splenius Capitis*, and Upper Parts of the *Sacrolumbalis*, and *Dorsi Longissimus*, it becomes Fleshy, marching under the *Scapula* to its Insertion at the Curvature of the Second (*i*), Third (*k*), and Fourth Ribs (*l*), by so many distinct Fleshy Endings, Representing the Teeth of a Saw. *Fig.* XVIII.

This aſſiſts in Elevating the Ribs or *Thorax*.

Veſal. M. T. II. Δ.

Serratus inferior poſticus.

The Origination of this Muſcle is much Larger than Authors generally aſſign it; In a Robuſt Subject we Obſerved its Continuation not only from the Spines of the *Vertebræ* of the Loins (*RR*), but from all thoſe of the *Thorax* (*PP*), as well underneath as below the Former Muſcle; its Superior and Inferior Parts being entirely Tendinous, its Middle growing Fleſhy near its Serrated Termination at the Curvature of the Ninth (*q*), Tenth (*r*), Eleventh (*s*), and Extremity of the Twelfth Ribs (*t*): The *Ductus* of Fibres of This paſſing Tranſverſe, and thoſe of the Precedent Deſcending Oblique; do Decuſſate each other in Acute Angles; which *Riolan* has well Obſerved, and contrary to the Opinion of Authors, aſſigns It with its Partner a different Uſe, in Depreſſing the *Thorax*, Both performing the Office of a Bandige in Binding together and Conſtringing the Poſterior Muſcles of the Spine, not unlike thoſe conſtructive In-

Fig. XV

Anthrop. Lib. V.

Incloſures of the Thigh and Cubit hereafter mentioned.

The *Common* Muſcles referred to the *Thorax*, and appearing on the Backſide, are the *Sacrolumbi*. However We think theſe may be included among thoſe of the Back, yet in imitation of moſt Authors we ſhall Treat of them in this place.

Tab. 2.

Sacrolumbalis.

This with the *Dorſi Longiſſimus* have their Origination in Common; Externally They are Tendinous as They ſpring from the Poſterior part of the Spine of the *Os Ilium* (30), and Superior Spine of the *Sacrum* (34), and all the Spines of the *Vertebræ* of the Loins (*RR*); Internally it Ariſes Fleſhy, not only from thoſe Parts, but from the Tranſverſe Proceſſes of the laſt named *Vertebræ* (*u w x y z*); whence with direct Fibres Aſcending before it marches over the Laſt Rib (*t*) its divided into Two Fleſhy Bodies, the Outwardmoſt of which is called *Sacrolumbus*, whoſe Fibres aſcend directly, and make ſo many Thin Tendons as there are Ribs to whom they

Fig. xviii.

are Inſerted; which are joined with ſo Acceſſory Muſcles, Ariſing from each Rib, and united with them before their Inſertions as they paſs over the Superior, as *Steno* has well Obſerved. And This Order or Multiformed diſpoſition of it, is continued the whole length of the *Thorax* to the Third, Fourth, Fifth, and Sixth *Vertebra* of the Neck, which Superior Part is by *Diemerbroeck* made a diſtinct Muſcle, and called *Cervicalis deſcendens*. Now all the Muſcles of the Head may be examined.

Specimen Myologiæ.

Lib. v. *Cap.* vi.

CHAP. XXII.

Of the Muſcles of the Head.

THE Head is moved by Muſcles that are either *Common* or *Proper*.

The *Common* are thoſe which move the Head together with the *Vertebræ* of the Neck, which ſhall be deſcribed in the following Chapter; under the Title *of the Muſcles of the Neck*.

The *Proper* are thoſe, which move the Head together with the firſt *Vertebra* of

of the Neck only, the reſt remaining unmoved, of which Latter Anatomiſts, as [a] *Speigelius*, [b] *Veſlingius*, and others reckon ſeven pair, *viz. Maſtoidei, Splenii, Complexi, Recti Majores, Recti Minores, obliqui Superiores & obliqui Inferiores*; But [c] *Oribaſius* adds two pair more, who is followed by [d] *Falloppius*, which ſhall be deſcribed here, as They Ariſe in Diſſection, together with another pair of Muſcles, not mentioned by any Author, (for what I know) but firſt obſerved by me ſometime ſince.

[a] *Lib.* iv. *Cap.* xii.

[b] *Lib. De Viſcer. Muſcul. ex. Veleno, Cap.* x. *Obſerv. Anatom.*

[c] *d. T.* 16. *A.*

Splenius.

So called from its Figure, ſomewhat repreſenting an Oxes Spleen, It Ariſeth partly Tendinous and partly Fleſhy, from the four ſuperior Spines of the *Vertebræ* of the *Thorax* (*PP*), which Lower part ſeems to be Diſtinct from its ſuperior, which Ariſeth from the Spines of the two Inferior *Vertebræ* of the Neck (*fg*): The former Aſcending obliquely grows Fleſhy, and becomes Tendinous again at its Inſertion to the Second, Third, and Fourth Tranſverſe Proceſſes of the *Vertebræ* *Fig.* xviii.

of the Neck (*n n*): The latter in like manner Aſcending obliquely outward, grows Fleſhy, and is ſo Inſerted to the *Occiput* (2), part of it lying under the Implantation of the *Maſtoideus* (*C*). Although this Muſcle by Anatomiſts be reckoned amongſt the Proper Muſcles of the Head, yet when it Acteth it muſt neceſſarily move the Second and Third *Vertebræ* of the Neck (to which it is Inſerted) obliquely backwards; But Acting with its Partner it pulleth them directly backwards. *Fig.* xvi *Fig.* vii

Ibid. F G H.

Complexus.

Or *Implicatus* according to *Laurentius*, 'tis alſo called *Tergeminus* from its being ſaid to have Three Beginnings as ſome imagin, which we could never as yet obſerve in Diſſection. It Ariſeth with ſix Thin, ſmall Tendons from the Tranſverſe Proceſſes of the *Vertebræ* of the Neck (*nn*), and in its deſcent from thence becoming Thicker and more Fleſhy grows partly Tendinous about its middle, where it is interwoven with various Orders of Fibres, and becoming ſtill more Fleſhy again,

Lib. v. *Cap.* xxi. *Fig.* xvii

again, is so Inserted to the Superior part of the *Os Occipitis* laterally (2), and the back part of the *Processus Mamillaris* (*b*); The Fibres of this Muscle are rightly observed to decussate those of the Former. *Falloppius* makes that part of it which is Inserted to the *Processus Mamillaris* a distinct Muscle; It Arising from the Transverse Processes of the First, Second, Third, Fourth, and Fifth *Vertebræ* of the *Thorax*, and from as many of those of the Neck; which we have sometimes observed, but this not appearing so commonly, inclines us rather to think it a *Lusus Naturæ* than a separate Muscle. Either of these *Complexi* Acting moves the Head backwards to one side; If both Act together, they assist the two Former. This with its Partner being raised, the Four following Muscles appear underneath, on each side.

Fig. xviii. *Fig.* viii. *D D D.* *servat.* *atom.*

Rectus Major.

This Ariseth partly Tendinous, but chiefly Fleshy from the Superior part of the double Spines of the Second *Vertebræ* of the Neck, and in its

Aſcent becomes Broader and Fleſhy, and is ſo Inſerted to the Poſterior part of the *Os Occipitis.* (*EE.*) Fig. vi

This Muſcle with its Partner Acting, pulls the Head directly back on the Firſt *Vertebra*, (Theſe being both raiſed, the Following will appear). This with the four ſubſequent Muſcles are named from their Progreſs, Poſition, or Magnitude.

Recti Minores.

Theſe are Two ſmall Muſcles appearing both in ſight at once, They ariſe Fleſhy from the Poſterior part of the firſt *Vertebra* of the Neck; and are ſo Inſerted to the middle part of the *Os Occipitis* in two ſhallow Depreſſures of the ſaid Bone. (*HH.*) Fig. vii

Theſe from their Uſe may be called *Renuentes* or Nodders Backwards, and are Antagoniſts to thoſe we ſhall hereafter deſcribe and call *Annuentes.*

Obliquus Superior.

This Ariſing Fleſhy from the Back-part of the Tranſverſe Proceſs of the Firſt *Vertebra* of the Neck, and in its ſome-

ſomewhat oblique Aſcent becometh a Fleſhy Belly, and leſſening it ſelf again, is Inſerted to the *Os Occipitis* laterally. (*FF.*) *Fig.* viii.

By this, together with its Partner (they never Acting ſeparately) the Head is moved Backwards on the firſt *Vertebra.*

Though the two Former Muſcles ſeem adapted for all neceſſary motions of the Head Backwards, yet it ſeems a provident Contrivance of Nature to add theſe; ſince the *Recti Majores* are by accident Extended when either of the Following Muſcles Act in turning the Head to one ſide, whereby they are deprived of performing their Office at that time, but the firſt *Vertebra* of the Neck moving with the Head; theſe Muſcles are then imploy'd in Pulling the Head Backwards, as in looking upward to one ſide.

Obliquus Inferior.

This Ariſeth Fleſhy from the External part of the Spinal Proceſs of the Second *Vertebra* of the Neck, cloſe by the Origination of the *Re-*

ctus

Ætus major, and being dilated into a Fleſhy Belly, paſſes obliquely to its Inſertion at the Tranſverſe Proceſs of the Firſt, where the Former Muſcle begins. (6) When this acts on either ſide the Tranſverſe Proceſs of the firſt *Vertebra* of the Neck is moved towards the Spine of the Second; wherefore ſome Authors have reckoned it amongſt the Muſcles of the Neck. But ſince the Head is alſo moved thereby, and the Face turned to that ſide on which it Acteth, it is not improperly reckoned amongſt the Muſcles that move the Head; it is Aſſiſted by the *Maſtoideus*. But of this more in its Order. *Fig.* v

The Body muſt now be turned on the Back again, to examine the reſt of the Muſcles of the Head that appear on the Forepart, together with thoſe of the Neck, of which the Firſt is the Maſtoideus *which is beſt raiſed, by freeing it at its Origination on one ſide, and its Inſertion on the other as in* Chapt. XII. *in Order to Diſſect the Muſcles of the Tongue,* Os Hyoides *and* Larynx.

Maſtoideus.

Vil. M.
T. P.

Maſtoideus.

So called, becauſe it is Inſerted to the Mammillary Proceſſe of the Temple-Bone: It Ariſeth partly Tendinous, and partly Fleſhy from the Upper part of the *Os Pectoris* (31) and near half the Clavicle; (14) with two (as it were diſtinct Originations, the firſt Aſcending ſomewhat obliquely outwards joyns with the Second, and marches up more directly, compoſing it Round, Thick, Fleſhy Body, and as it paſſeth over the Upper part of the *Muſculus Levator Scapulæ*, becomes Broader again, at its Inſertion to the Back part of the *Proceſſus Mamillaris* (*b*) and the Adjoyning part of the *Os Occipitis*, (*B*) where the *Splenius* (above treated of) is Implanted. (*P.*)

Fig. xvii.

Fig. viii.

Anatomiſts not taking Notice of the true Inſertion of this Muſcle, have generally erred in their conjectures concerning its Uſe, ſuppoſing, that if both Act, the Head is bended Forewards, which Action, if rightly conſidered, cannot be performed by theſe Muſcles, except the *Vertebræ* of the Neck are alſo inclined Forward with

Fig. iv.

with it, ſince their Inſertion are right *e Diametro* oppoſite, if not behind the Articulation of the Head with the firſt *Vertebra*; which part of the *Cranium* (namely the *Proceſſus Mamillaris*) neither Aſcends nor Deſcends in that Action: Wherefore it neceſſarily follows, that when the Head is moved, either directly Forwards or Backwards on the firſt *Vertebræ*, theſe Muſcles cannot Act. But if either of them Act, the Face is then turned to the contrary ſide; ſo when we look over the Left Shoulder, the Right Muſcle Acts *& vice verſa*; which may be obſerved in the naked Necks of living Perſons, and is commonly expreſt by Painters. But if either of theſe Muſcles ſhould more and more contract, the Head is pulled down to one ſide forwards, as we ſee in Wry-Necks commonly ſo called; where one of theſe Muſcles is always contracted.

[a] *Lib. de Muſculis. Cap.* x. [b] *Lib.* ii. *C.* xxviii. [c] *Obſervat. Anatom.*

The next Muſcle that preſents it ſelf to the Knife, is partly deſcribed by [a] *Galen*, and mentioned by [b] *Veſalius* belonging to the Back: [c] *Fallopius* makes it his ninth pair of the Head. It is alſo mentioned by *Riolan*, *Caſp.*

Casp. Bauhin, Bartholomeus, Eustachius and others. Tho they are large Fleshy Muscles, and appear immediately under the *Gula* or *Pharynx*, yet *Spigelius* and some others take no notice of them. They are likewise expresst by *Bidloo*, and called *Recti interni*: But we having observed an other small pair of Muscles underneath them of a right position likewise, deserving the Name of *Recti*, to distinguish which from those of the Back part, and these following Muscles we shall call them *Recti interni Minores*, and These, *Recti interni Majores.*

Rectus internus Major.

T. 18. *1.*

This Arises Tendinous but chiefly Fleshy, from the Forepart of all the Transverse Processes of the *Vertebræ* of the Neck, except the first and second and in it's Ascent becoming Fleshy, passes over those two Superiour *Vertebræ* and is inserted to the Anteriour *Appendix* of the *Os Occipitis* near the great *Foramen*, that Transmits the *Medulla Oblongata.*

This

This manifeſtly Bends the Head Forewards, and therefore may be called *Flexor Capitis* from its Uſe.

This with its Partner being removed, the following Muſcles appear underneath them.

Rectus internus Minor.

This and its Partner appear on the Forepart of the firſt *Vertebræ* like the *Recti minores* on the Back part, and ariſe near its Tranſverſe proceſſes and Aſcending directly, are inſerted to the Anteriour *Appendix* of the *Os Occipitis* immediately under the Former *i*. *Fig.* ii

Theſe nod the Head forward, and are Antagoniſts to the *Recti minores* as is above noted, wherefore they may be called *Annuentes*.

The laſt pair of Muſcles which we ſhall Treat of belonging to the Head, are mentioned by *Galen*, and Accurately deſcribed by *Falloppius* in theſe Words, *Ultimo loco notandi ſunt Muſculi duo admodum parvi qui A Proceſſu Tranſverſo Primæ Vertebræ orti, valde graciles aſcendunt ad Caput & in illud inſeruntur prope Mammillarem proceſſum.* *Obſervat. Anatom.*

Theſe

Theſe we ſhall call *Recti Laterales*, from their Progreſs and Poſition; they may be alſo called *Renuentes Laterales* from their Uſe.

Rectus Lateralis.

This is a Short, Thick, Fleſhy Muſcle; Ariſing from the Superiour part of the Extremity of the Tranſverſe Proceſs of the firſt *Vertebra* of the Neck, between the Former and *Obliquus Superior*, thence Aſcends directly to its Inſertion to the *Os Occipitis* in the Interſtice made by the *Proceſſus Mammillaris* and *Styloides*, *k.* *Fig.* iii. This nods the Head to one ſide.

CHAP. XXIII.

Of the Muſcles of the Neck.

THE Muſcles of the Neck move the Head ſecondarily, wherefore they are Eſteemed as *Common* to both, of which Authors reckon Four Pair, namely the *Longi Colli*, the *Scaleni*, (which according to *Falloppius* are deſcribed amongſt the Muſcles of the

the *Thorax*) the *Tranſverſales* and *Spinati Colli*. But firſt of thoſe that appear in the Fore-part.

Longus Colli.

This Ariſes partly Tendinous, but chiefly fleſhy from the Fore-part of the Five Superiour *Vertebræ* of the *Thorax*, and being dilated in its middle to a fleſhy Belly, is Inſerted to the Fore-part of all the *Vertebræ* of the Neck.

This with its Partner Acting bends the Neck right forwards. Between this and the *Scalenus*, (deſcrib'd *Chap.* XIX.) lies the *Rectus internus Major*, deſcrib'd in the precedent Chapter, which *Veſlingius* calls *Muſculus Brevius*. *Cap.* xi.

The Body muſt be now turn'd on its Face again in order to examin the reſt of the Muſcles that appear on the Back part of its Trunk.

Spinalis Colli.

So called, becauſe it accompanies the Spines of the Neck, it ariſes from the Five Superiour Tranſvers Proceſ-

ces

ſes of the *Vertebræ* of the *Thorax*, and Inferiour of the Neck, and in its Aſcent becomes more Fleſhy, and is ſo inſerted largely into the Inferiour part of the Second *Vertebræ* of the Neck, laterally *II.* &c. *Fig.* viii.

Theſe Draw the *Vertebræ* of the Neck directly backwards: Either of theſe Muſcles being Raiſed, the Following will appear underneath.

Tranſverſalis Colli.

This Ariſeth Fleſhy from all the Tranſverſe Proceſſes of the *Vertebræ* of the Neck except the Firſt and Second, and is inſerted after an oblique Aſcending progreſs to their Superiour Spines (*K*): It being a Continuation of the ſame Series of Muſcular *Fibres* that compoſe the *Sacer* and *Semi-Spinatus*, of which hereafter.

If either of theſe Muſcles act, the *Vertebræ* of the Neck are moved obliquely Backward, as when we look over one Shoulder.

Beſides theſe Muſcles (which are already Treated of by Anatomiſts) we obſerved in Diſſection ſome Fleſhy Bodies lying between the Bifurcated

Spines of each *Vertebra*, which upon Examination proved to be ſo many Pair of Muſcles, as there was Interſtices between the ſaid Spines. And in thoſe Bodies that have the Spinal Proceſs of the laſt *Vertebræ* ſomewhat Broader than it is commonly found; we have ſeen Five Pair of theſe Muſcles, which from their Situation we call *Interſpinales Colli.*

Interſpinales Colli.

Theſe are ſmall Fleſhy Muſcles, ariſing from the Superior parts of each double Spinal Proceſs of the Neck (*b*, *c*, *d*, *e*, *f*,) except that of the Second *Vertebræ* (*a*), and are Inſerted to the Inferior parts of all the ſaid double Spines. *L L.* Fig. x

When theſe Muſcles Act, they draw the Spines of the *Vertebræ* of the Neck nearer each other. Theſe we firſt diſcover'd in the year 1690. Fig. 1

CHAP.

CHAP. XXIV.

Of the Muſcles of the Back and Loins.

WE ſhall not inſert the various Opinions Authors have entertained concerning theſe Muſcles, ſince we have obſerved ſo great a difference in divers Subjects, as hath inclined us to think, that amongſt Ten of them *Three* will ſcarce be found exactly alike in this reſpect; which might induce *Falloppius* to that Ingenious Confeſſion, that they ſeemed to him to be an Indigeſted Heap and confuſed *Chaos*. In order to render an Account of them as explicit as we can, we ſhall conſider them as *Common* to the Back and Loins, or as *Proper* to either.

Cervum. Autom.

The *Common* are ſuch as ariſe from the one, and are Inſerted to the other as the *Dorſi Longiſſimi*.

The *Proper* are either ſuch as Ariſe from the *Os Sacrum* or *Ilium*, and are Inſerted to the *Vertebræ* of the Loins only, as the *Quadrati Lumborum*, or Ariſe from the Tranſverſe Proceſſes,

either of the *Vertebræ* of the Loins or *Thorax*, and are Inſerted to their Superior Spines; as the *Tranſverſales Vertebrarum Dorſi & Lumborum*; which by Authors are commonly called *Sacer* and *Semiſpinalis*: Firſt of the *Common* Muſcles.

Dorſi Longiſſimus.

Veſal. M. T. 12. N. T. 13. I.

This Ariſeth in Common with the *Sacrolumbalis* from the Spine of *Os Ilium* (30) and the Superior part of the *Sacrum* (34) and all the Spines of the *Vertebræ* of the Loins (*RR*); Externally Tendinous, Internally Fleſhy, in its Aſcent it is Inſerted to the Tranſverſe Proceſſes of the *Vertebræ* of the Loins (*S S S S*) and as it marches over the laſt Rib (*t*), this great Muſcle divides it ſelf into Two, the Outermoſt of which is the *Sacrolumbalis* as deſcribed *Chap*, the XXI; But the Innermoſt next to the Spine, is the *Longiſſimus Dorſi*, which Aſcends with a partly Fleſhy and partly Tendinous outſide, and Fibres paſſing ſomewhat obliquely outward. Part of which Tendinous Fibres ariſe diſtinct from the Inferiour Spines of the *Fig. X*

Ver-

Vertebræ of the *Thorax* (*PP*) and Superior of the Loins (*R R*) from which likewiſe Ariſe ſome Fleſhy Fibres Aſcending obliquely Inwards, and are Inſerted to the Fifth, Sixth and Seventh Spine of the *Thorax* (*PP*) as expreſt by *Bidloo*, and called *Semiſpinalis*. The other larger part of this Muſcle aſcending on the *Thorax* divides it ſelf into many diſtinct Fleſhy Portions not much unlike a Palm Branch, which are Inſerted in a twofold manner to the Tranſverſe Proceſs of each *Vertebra* of the *Thorax* (*O O O*) and Tubercle of each Rib; as alſo to the Tranſverſe Proceſſes of the *Vertebræ* of the Neck (*n n.*) Fi. xviii. 28. 29.

When this, and its Partner Acts, they are not only Serviceable in keeping the Trunk of the Body erect and bending it backwards, but they are alſo uſeful in Progreſſion, as it may be obſerved when either Leg is moved forewards; This Muſcle on the ſame ſide is in Action, which to us ſeemeth to be advantagious in rendring the *Os Ilium* at that time ſtable, ſo that the Thigh may be the more commodiouſly Elevated; in regard it is ſo

moved by a Muſcle ariſing from the *Vertebra*, above the *Os Ilium*, namely the *Pſoas*.

(*To examen this Muſcle it is better to uſe the Fingers, or the pointed Handle of a Diſſecting Knife, to divide it from its Companion, the* Sacrolumbalis, *and diſcover its* Anſulæ, *as* Spigelius *calls thoſe parts of it which are Inſerted to the Tranſverſe Proceſſes of the Vertebræ of the Back and Loins*;) This being removed, the *Proper* Muſcles offer themſelves to view; firſt of thoſe of the Loins.

Veſal. M. T. 13. 8. 14. P.

Quadratus Lumborum.

This is a Short, Thick, Fleſhy Muſcle, ſituated in the Region of the Loins, or between the laſt Rib and Spine of the *Os Ilium*, it ariſeth Fleſhy from the Poſteriour part of the Spine of the *Os Ilium* (30), and is inſerted to all the Tranverſe Proceſſes of the *Vertebræ* of the Loins internally (*u w x*), under the *Pſoas* Muſcle. This like the *Muſculus Rectus Abdominis*, either moves the *Vertebræ* of the Loins nearer the *Os Ilium* laterally, when we are ſtanding, on both Legs *Fi.* xvi

firm

firm, or elſe moves the *Os Ilium* nearer the ſaid *Vertebræ*, on the contrary ſide; when we ſtand upon one Leg only.

Sacer.

This may be alſo called *Tranſverſalis Lumborum*. It lies under the Tendinous part of the *Longiſſimus* above mentioned; It ariſeth Fleſhy not only from the *Os Sacrum* (34), but alſo from the Tranſverſe Proceſſes of all the *Vertebræ* of the Loins, and is inſerted to their Superiour Spines. We have ſometimes obſerved a *Spinalis Lumborum* like the *Spinalis Colli* above deſcribed, which Ariſing from the Superiour Spines of the *Os Sacrum*, and marching with direct Fleſhy Fibres, iſſo Inſerted to Superiour Spines of the *Vertebræ* of the Loins; The *Tranſverſalis Lumborum*, now deſcribed lying under it.

Fi. xviii.

Semiſpinatus.

This ſeems to be a meer continuation of the precedent Muſcle, therefore might not improperly deſerve

the Name of *Tranſverſalis Dorſi*; it Ariſeth Fleſhy from all the Tranſverſe Proceſſes of the *Vertebræ* of the *Thorax* (*OO*), and marching obliquely upwards is Inſerted to the Superiour Spines of the ſaid *Vertebræ* (*PP*). Theſe with the former, and *Tranſverſales Colli*, Acting, move the whole Spine, or *Vertebræ* of the Neck, Back, and Loins, obliquely backwards, as when we endeavour to look very much behind us: If they all Act together on each ſide, they aſſiſt in Erecting the Trunk of the Body. *Fi.* xv

We need not wonder at the many *Multiform* Muſcles inſervient to the Extention or Erection of the Head, Neck, Back and Loins, if we conſider how much greater force is required to that end, in regard to the projecting forewards of the *Head* and *Thorax*; for as it appears in the Skeleton, *Fig.* xviii. we ſhould on the other hand think it conſtantly liable to fall on its Face, were it not ſupported by theſe many ſtrong Muſcles; in which we have a plain Demonſtration of the Immenſe Wiſdom of the moſt Wiſe Architect, in Frameing a Structure projecting from its *Fulcimen*, which for ſeveral

Ends

Ends (too numerous to ſpecifie here) is to be moved Forewards, Backwards, and Sideways, and therefore by no other means could be ſupported ſo as to render it upon occaſion Flexible, but by Muſcles, ſince they only are capable of a greater Contraction and Relaxation than any other Springy Bodies compoſed of Ligaments, *&c.*

Thus having briefly Treated of all thoſe Muſcles, as yet known that appear in the Trunk of the Body; we come next to thoſe belonging to the Artus, *and firſt of thoſe that move the Arm; two of which, namely, the* Pectoralis & Longiſſimus, *we were obliged to Diſſect,* Pag. 104. 112. *to diſcover their Subjacent Muſcles, but we ſhall now deſcribe them amongſt the reſt, as the order of Diſſection requires; for the convenient Performance of which, we are wont to take of the whole Arm together, with the* Scapula *and* Clavicula, *by dividing the latter from the* Os Pectoris, *by which means the trouble in examining the following Muſcles is leſſened, thoſe moving the* Scapula *being Cut from it.*

CHAP.

CHAP. XXV.

Of the Muſcles of the Arm, or, Os Humeri.

[a] *Chap.* xviii. [b] *Iſagog. Anatom.* [c] *Lib.* II. *Chap.* xxiv. [d] *Lib.* V. *Chap.* xxiv. [e] *Ta.* xvii. *Lib.* IV. *Spigelii.*

[a] GALEN, [b] *Jacobus Sylvius*, and [c] *Veſalius*, deſcribe Seven Muſcles belonging to each Arm, *viz. Pectoralis*, *Deltoides*, *Teres Major*, *Latiſſimus Dorſi*, *Supraſpinatus*, *Inferaſpinatus*, and *Subſcapularis*. *Arantius*, in his Anatomical Obſervations, counts another by [d] *Riolan*, called *Coracobrachieus*, to which [e] *Julius Caſſerius Placentinus* adds the *Teres Minor*, by ſome reckoned as the eighth Muſcle of this part, which is therefore called *Octavus Humeri Placentini*: Of theſe in their Order.

Pectoralis.

Veſal. Muſcul. T. 1. L.

So called from its Situation. This hath a broad Semicircular, Fleſhy beginning, above, from near half the Inferiour part of the *Clavicula* (14); *Fi.* xvi Below, from the *Os Pectorale* (31), and all the Cartilaginous Endings of the ſix ſuperiour Ribs, and from the Bony

Bony part of the seventh, it hath a distinct *Fasciculus* of Fleshy Fibres, (which sometimes we have seen confounded with the *Obliquus Descendens Abdominis*) from this large Origin it marcheth Transversly, and becoming narrower but thicker, lessens it self as it passeth over the upper part of the *Biceps Cubiti*, and is Inserted by a short but broad strong *Tendon*, to the Superior part of the *Os Humeri*, above the Termination of the following Muscle.

The Fibres of this Muscle Decussate each other, near their Implantation to the *Os Humeri*; those of the Superiour part running downwards, and those of the Inferiour marching up, Intersect the Former in Acute Angles.

When it Acts it moves the Arm either obliquely Upwards, or directly Forewards, or obliquely Downwards, according to the various Direction of its *Series* of *Fibres*.

Vul.
Mcul.
T. I.K.

Deltoides.

So called from its Figure, being like the Greek Δ. It hath a broad Origination, forewards from above one third

third of the Inferiour and External part of the *Clavicula* (11), where it is entirely Fleſhy; Backwards it ſpringeth partly Fleſhy, but chiefly Tendinous from the whole Inferior Margin of the *Spina Scapulæ* (16), from theſe places deſcending ſoon becomes Thick and Fleſhy, growing narrower till it is inſerted by its partly Fleſhy, and partly Tendinous *Apex*, to the middle of the *Os Humeri* (17). This draws the Arm either directly upwards, or ſomewhat Forewards or Backwards according to the Direction of its differing *Series* of *Fibres*. Fi. x i

Veſal. M. T. 11. G.

Supraſpinatus.

So called becauſe it is placed above the Spine of the Shoulder-Blade; It Ariſeth Fleſhy from the Superiour part of the *Baſis Scapulæ* (13), that is above its Spine, as alſo from the ſaid Spine and *Coſta Superior* of the *Scapula* (15), from thence paſſing between the *Proceſſus Coracoides* (16), and *Anchoreformis* (15), it grows leſs and becoming Tendinous, marches over the Articulation of the *Humerus*, joyning its Tendons with the following, is Fig. x

Inſerted

Inſerted to the Head of the *Os Humeri* (20). The Proper Uſe of this Muſcle is to lift the Arm upwards towards the *Occiput*. *Fig.* xvii.

Infraſpinatus.

Vide T. I.

So called becauſe it is placed below the Spine. This Ariſes Fleſhy from the Inferiour part of the *Baſis Scapulæ* (13), as alſo from from its Spine (16), and Inferiour *Coſta* (14), and *Dorſum* (12); from hence paſſing in a Triangular Form according to the Figure of the part, leſſening it ſelf as it marches over the Juncture it becomes Tendinous, and is inſerted like the Former to the Head of the *Os Humeri* (19). This moves the Arm directly Backwards. *Fi.* xviii.

Teres Minor.

Vide Tab. I. Lib. 4, b.

So called from its Figure and Magnitude, to diſtinguiſh it from the Following.

This Muſcle in ſome Bodies is confounded with the Former, but in others we have found it diſtinct.

It Ariſes Fleſhy from the Lower part of the Inferior *Coſta* of the *Scapula* (14) and deſcends obliquely over the Superior Head of the *Gemellus Major;* where becoming Tendinous it is Inſerted to the Head of the *Os Humeri* (19). Fig. XI.

When this Acteth the Arm is moved ſomewhat Backwards and Downwards.

Teres Major.

Veſal. M. T. 11. L.

This Ariſes from the Inferior Angle of the *Scapula* (13), and becoming a Round, Fleſhy Body Aſcends obliquely with the Former, but then paſſeth under the Superior Head of the *Gemellus* and makes a ſhort, Flat Tendon Inſerted below the Neck of the *Os Humeri* cloſe to that of the Following.

Veſal. M. T. 9. O. P

Latiſſimus Dorſi ſive Aniſcaptor.

The firſt Appellation it receives from its large demenſions, it with its Partner covering the whole Back.

The latter from the uſe that is ſometimes made of it. Its Thin, Broad,

Broad, Tendinous Origination is continued from the Seven Inferiour Spines of the *Vertebræ* of the *Thorax* (*PP*), and all thoſe of the Loins (*RR*) and Superior of the *Os Sacrum* (34), and the Poſterior part of the Spine of the *Os Ilium*; (30) beginning to grow Carnous as it paſſes over the *Longiſſimus Dorſi* and *Sacrolumbus*, and in its Progreſs over the Curvated part of the Ribs it receives ſeveral *Faſciculi* of Fleſhy Fibres Ariſing from thence, which by their Conjunction compoſe a Thick Body, ſtill leſſening it ſelf in its demenſions as it marcheth towards the *Axilla* and running over the Inferiour Angle of the *Scapula*, from whence ſometimes does Ariſe a Fleſhy part of it, which I have Obſerved in thoſe Bodies in whom the *Teres Minor* was abſent, is at laſt inſerted by a Short, but Flat Strong Tendon to the *Os Humeri* near the Former. *Fig.* xviii.

The next Muſcle that preſents it ſelf, is the *Coracobrachialis*, by ſome called *Perforatus*, which is deſcribed by *Galen* and *Veſalius* with the Internal Head of the *Biceps Cubiti*.

Coraco-

Coracobrachialis.

Veſal. M. T. 1. R.

So called from its Origination and Inſertion; it Ariſes partly Fleſhy and partly Tendinous from the Extremity of the *Proceſſus Caracoides Scapulæ*,(16) *Fig.* and in its deſcent it becomes larger, ſtrictly adhering to the Internal Tendinous Beginning of the *Biceps*, and parts from it near its Tendinous Inſertion at the middle of the Internal part of the *Os Humeri* (18). Through this Muſcle paſſeth a Large Nerve; wherefore by ſome it is called *Perforatus.*

When it Acteth the Arm is moved Upwards, and turned ſomewhat Obliquely Outward.

Subſcapularis.

Bid. Tab. 65. E.

So Named from its Situation, by ſome called *Immerſus.* It is a Large Fleſhy Muſcle, filling he Internal Concave part of the *Scapula* (17); Ariſing Fleſhy from its whole *Baſis* and *Superior* and *Inferior Coſta* Internally, and marcheth forward, leſſening it ſelf according

cording to the Demenſions of the Bone, and paſſing over the juncture, is Inſerted in a Semicircular Manner to the Neck of the *Os Humeri* (20). *Fig.* xvii.

When this Acteth, the *Os Humeri* is Pulled nearer the Trunk of the Body. The Tendon of this Muſcle together with the *Supra* and *Infraſpinatus* and *Teres Minor* unite near their Inſertions, and Environ the Articulation of the *Os Humeri* with the *Scapula* not unlike the *Ligamentum latum* of the *Coxa*, to prevent frequent Luxations: And by their Succeſſive Alternate Acting, the Arm is moved Circularly.

CHAP. XXVI.

Of the Muſcles of the Cubit.

THE Lower Part of the Arm from the Elbow to the Wriſt, is called the *Cubit*, which is either Bended or Extended by Five Muſcles, Namely, *Biceps*, *Brachiæus internus*,

Gemellus, *Brachiæus externus*, and *Anconæus*.

Vesal. M. T. 1. 2.

Biceps.

Becauſe it hath two Heads or Beginnings, the Firſt or Outmoſt, Ariſes with a long Round Tendon from the Upper Part of the Brink of the *Acetabulum Scapulæ*, (17.) and runs under the Ligament of the Articulation in a *Sulcus* or Channel on the Head of the Shoulder-Bone, wherein it is incloſed by a proper Ligament. In its Deſcent it begins to grow Fleſhy as it marcheth under the Termination of the Pectoral Muſcle, where dilating it ſelf into a Large Fleſhy Body, it joyns with its other Head or Beginning. The Latter Ariſeth with a ſomewhat Broad, Flat and Long Tendon at the Extremity of the *Proceſſus Caracoides Scapulæ* (16); in its deſcent it ſtrictly adheres to the *Coracobrachialis* (wherefore ſome Authors not rightly deſcribing that Muſcle amongſt thoſe of the Arm, have miſtaken it for a Fleſhy Beginning of this) But then parting from it, both theſe Heads compoſe a Large Fleſhy Belly, which becoming Tendinous near *Fig.* xvi

near the *Cubit*, is commonly ſaid to be Inſerted by a Strong, Round Tendon to the Tubercle at the Upper Head of the *Radius*, (25.) But we *Fi.* xvii. have obſerved this Tendon to be double, the External of which being Thin paſſeth obliquely over the *Muſculus Pronator Radii Teres*, and Membrane like expanding it ſelf, joyns with the *Membrana Communis Muſculorum*, which Embraceth all the External Muſcles of the *Carpus* and Fingers.

When this Muſcle Acteth the *Cubit* is Bended.

The double Tendinous Termination of this Muſcle, (tho' not taken Notice of by any Author that we know) is very evident, and was obſerved firſt by us, ſome years ſince in Diſſecting theſe Muſcles, in Company with our very good Friend, that moſt Indefatigable and Curious Botaniſt Mr. *Samuel Doody*. It appeareth immediately under the Skin and *Membrana Adipoſa* of the *Cubit*.

As for the uſe of this External Tendon which we call *Faſcia Tendinoſa*, it ſeems deſigned not only for the more advantagious Elevation, or

Bending of the *Cubit*, which it more eaſily moves, by how much the more it recedes from the Centre of its Motion or *Fulcimen* at the Lower part of the Arm-Bone, (23) and approaching to its other Extream; But likewiſe ſtrictly including all the External Muſcles, whether belonging to the *Radius*, *Carpus*, or Fingers, it thereby Corroborates them in performing thoſe ſtrenuous Actions they are neceſſarily employ'd in. This Latter Uſe was firſt ſuggeſted to us by obſerving thoſe Artificial Bandages made of Leather which ſome Laborious *Mechanicks* make Uſe of (by Adapting them to the Belly'd part of the Muſcles of the *Cubit*) amongſt which Turners and eſpecially thoſe that uſe the Raſp in making the Frames for Cane-Chairs (as they are commonly called) like a double Screw, are frequently obliged to this Artifice. *Fig.* xvi

In *Phlebotomy* the *ductus* of theſe External Tendinous Fibres ought to be reſpected by directing the Launcet according to their Length, to avoid too great a diviſion of them which is frequently the Occaſion of

thoſe

thoſe ill Symtoms that remain after that ſo commonly Practiſed Operation by Bold Blood-Letters.

An extraordinary Caſe relating to this Muſcle once happened in our *Practice*. A Woman, three days before ſhe conſulted us, had, (as ſhe ſuſpected) Diſlocated her Shoulder-Bone by wringing of Linnen Cloaths after waſhing (which is commonly done to expreſs the Water) adding, that in ſtraining her Arm, in that Action, ſhe ſenſibly felt ſomething (as ſhe thought) ſlip out of its place on her Shoulder. After examining the part, we were well ſatisfied that there was no Diſlocation: But obſerving a Depreſſure on the External part of the Deltoide Muſcle, and finding the two Inferior Tendons of this Biciptal Rigid, and the *Cubit* thereby denied its due Extention, we ſuſpected that the External Tendinous Beginning, (before taken notice of) was ſlipt out of its Channel in the *Os Humeri*; but finding the part at that time ſomewhat Inflamed, ſhe having not long before made uſe of it. We adviſed her to an Emollient Application, and to give it reſt till the

next morning, at which time we found our Conjecture true, and by turning the whole Arm to and fro, it readily ſlipt into its place, ſhe recovering the uſe of the Part immediately.

Veſal. M. T. 1. S.

Brachiæus Internus.

This derives its Name from its Situation, lying partly under the Former, It Ariſeth Fleſhy from the Internal part of the *Os Humeri* (18) at the Inſertion of the *Deltoides* and *Caracobrachialis* Muſcles, and deſcending over the Juncture of the *Cubit* with the Arm-Bone, it's Inſerted partly Fleſhy and partly Tendinous to the Superior and Fore-part of the *Ulna* (26). This is alſo a Bender of the *Cubit*. *Fig.* xvii

Id. M. T. 2. O P 2.

Gemellus.

So called from its double Origin, It Ariſeth firſt Tendinous from the Superior part of the Inferior *Coſta* of the *Scapula* (14) internally, and as it paſſeth between the two Round Muſcles it grows Fleſhy, and in its Deſcent joineth with its other Beginning, which Ariſeth Broad and Fleſhy *Fig.* xviii

from

from the Upper and Back-part of the *Os Humeri*, under the Deltoid Muſcle, and being Tendinous on the outſide and Fleſhy within, is ſo Inſerted to the Superior and External part of the *Ulna* called *Olecranum*, and *Ancon*, or the Elbow. (24.) *Fig.* xviii.

Its uſe is to Extend the *Cubit*; If we examin the two beginnings of this Muſcle we ſhall find them interwoven with various Orders of Fibres, whereby it is rendered capable of performing the Extenſion of the *Cubit* with a greater ſtrength, which appears in Tumblers when they are Walking on their Hands, who by an Immediate Extenſion of their *Cubits* can return to their Feet.

l. M. T.
2. X.

Brachiæus Externus.

This ſeems to be the Third Beginning of the former Muſcle, its Origination is continued from above the middle of the Inferior and Back part of the *Os Humeri* (17), to its Cavity, which receives the *Olecranum* (24) in the Extenſion of the *Cubit*, where joining with the Tendinous outſide of the Former, it is Inſerted with it, as aboveſaid.

Bid. T. 69. prope B.

Anconæus.

So called by *Riolan* from its Situation, It Ariseth Fleshy from the Inferior and Back-part of the *Os Humeri* (20), growing larger as it marcheth between the Superior ends of the *Ulna* and *Radius*, and is Inserted Fleshy to the Lateral part of the Former a Thumbs length below the *Olecranum.* (24.)

Lib. v. *Cap.* xxv.

Fig. xvi

This is also an Extender of the *Cubit.*

The Muscles of the Palm of the Hand offer themselves to be Dissected, before we can Examin Those of the Carpus, Fingers, *and* Radius.

CHAP. XXVII.

Of the Muscles of the Palm of the Hand.

Observat. Anatom.

THe Ancient Anatomists mention but one Muscle belonging to the Palm, namely, the *Palmaris longus*; But *Falloppius* describes the *Palmaris brevis*, communicated to him by *Joannes Baptista Cannanus* an Eminent Ana-

Anatomiſt his Contemporary, and was firſt publiſhed by *Valverda* in his Anatomy, written in *Spaniſh*.

Palmaris Longus.

This has an Acute Beginning from the Internal Extuberance of the *Os Humeri* (22), and ſoon becoming a Fleſhy Belly, and contracting it ſelf again to a Long, Flat, Slender Tendon, marches obliquely with the Tendon of the *Flexor Carpi Superior*, and paſſing over the *Ligamentum Anulare* where it expands it ſelf, and cleaves firmly to the Skin of the Palm, is Inſerted to the roots of the Fingers laterally; It being there divided to Tranſmit the Tendons that Bend them. *Fig.* xvii.

Columbus obſerves the long Beginning of this Muſcle from the Extuberance of the *Os Humeri* is ſometimes wanting, which obſervation is alſo confirmed by our Experience. It Aſſiſts in firmly, graſping any Tactile Body, and defends the ſubjacent Tendons from External Injuries.

Pal-

Bid.T.64. K.

Palmaris Brevis.

Lib. v. C. XXXV.

By *Spigelius* called *Caro Muſculoſa Quadrata.* Anatomiſts have been extreamly deceived in their Idea's of this Muſcle; it not Ariſing from the *Membrana Carnoſa*, as *Columbus* pretends, or from the Eighth Bone of the *Carpus*, as *Falloppius* Writes; but it ſpringeth with a Broad Membrane-like Tendon from the External part of the *Os Metacarpi Minimi Digiti*, and one of the Bones of the *Carpus*; whence Aſcending over the *Abductor Minimi Digiti* it becomes a Thin Diſgregated Fleſhy Muſcle, marching under the Tendinous expanſion of the Former in the Palm, and is Inſerted by a ſhort, ſtrong Tendon, to the Eighth Bone of the *Carpus.*

Obſervat. Anatom.

This Acting Draws the *Mons Lunæ* towards the *Os Metacarpi Minimi Digiti*, whereby the Palm becomes hollow; contrary to the Opinion of *Spigelius*, who pretends it Extends the Hand when we open it; which is not done by any proper Muſcle, but by the Common Extenders of the Fingers.

CHAP.

CHAP. XXVIII.

Of the Muſcles of the four Fingers.

THESE we ſhall divide into *Common* and *Proper*. The *Common* Muſcles of the Fingers are ſuch as Ariſe from the External or Internal Protuberances of the *Os Humeri*, and ſubdividing themſelves, are Inſerted into moſt, if not all the Fingers; namely *Perforatus*, *Perforans*, *Lumbricales*, and *Extenſor Communis Digitorum*. The *Proper* Muſcles of the Fingers are ſuch as have their Beginnings diſtinct, and are Inſerted without any ſubdiviſion into each reſpective Finger; as the *Interoſſei*, The *Extenſor* and *Abductor Indicis*, the *Extenſor* and *Abductor Minimi Digiti*: Firſt of the *Common* Muſcles of the Fingers.

Perforatus.

So called becauſe its Tendons are Perforated to admit Thoſe of the following Muſcles to paſs thorough Them

Them to their Inſertions; It is alſo call'd *Sublimis* from its Situation, being above the Following; and *Flexor ſecundi Internodii Digitorum* from its Uſe. It Ariſeth Tendinous from the Internal Extuberance of the *Os Humeri* (22) between the *Flexores Carpi*; *Fig.* it alſo has a Diſgregated Fleſhy Origination from the Fore-part of the *Radius*, between the *Pronator Radii Teres* and *Flexor Pollicis Magnus*, compoſing a Fleſhy Belly leſſens it ſelf in leſs then half its progreſs, where it's divided into Four Fleſhy Portions, each of which ſoon becomes ſo many Roundiſh Tendons, and are included in their proper Mucilaginous Membrane as they paſs under the *Ligamentum Tranſverſale Carpi* through the Palm; near the firſt Internode of the Fingers each Tendon is divided to admit thoſe of the following Muſcle to paſs through them, then joining, and ſubdividing again, immediately before they are Inſerted to the ſuperior part of the ſecond Bone of each Finger (30.)

This and the following Muſcle are Accurately expreſt by *Bidloo*, *Tab.* 67.

Per=

Perforans.

Becauſe its Tendons run through thoſe of the Former, it's alſo called *Profundus* from its Situation, and *Tertii Internodii Digitorum Flexor* from its Uſe. It Ariſeth Fleſhy from near two Thirds of the Superior and Fore-part of the *Ulna* (26), as alſo from the Ligament between the laſt named Bone and *Radius*, becoming a Large Thick Bellied Muſcle, grows outwardly Tendinous before it paſſes over the *Pronator Radii Quadratus*, and is divided into Four Round Tendons which march under thoſe of the former Muſcle beneath the *Ligamentum Tranſverſale* abovementioned, (from each of theſe Tendons the *Muſculi Lumbricales* are ſaid to Ariſe) after which they paſs through the *Fiſſur*'s of thoſe of the Former, and proceeding over their extremities, Terminate in the ſuperior and fore-part of the third Bone of each Finger. (30.) *Fig.* xvii. *Fig.* xvii.

The Tendons of the laſt deſcribed Muſcle running through thoſe of the Precedent, is a no leſs Uſeful then Stupendous Artifice in Nature.

To

To the end the Fingers (like ſo many Leavers) ſhould be Bended with great Force, it is abſolutely neceſſary the ſtrongeſt Muſcle ſhould be Inſerted neareſt their Extremities, and fartheſt from their *Fulcimina* the *Oſſa Metacarpi:* But in regard every Internode ſhould be attended with a particular Muſcle, the better to accommodate them to various Imployments, and the Origination of the ſuperior or *Perforatus* is confined to the *Apex* of the Internal Extuberance of the *Os Humeri* and upper part of the *Radius* only, wherefore could not be a fit Inſtrument for ſo Strenuous an Action, and that not only in regard to its Magnitude, but by the Approach of its two Extreams when the *Cubit* or *Carpus* are Bended; both which would be no ſmall impediments in divers Actions; it's therefore neceſſary it ſhould be imployed in the Motions of the ſecond Internodes: But ſince theſe ſuperior Tendons would be hereby liable to interrupt the Inferior in their Right progreſs to the Extremities of the Fingers, it ſeems an Argument of great Counſel in tranſmitting the Latter through the *Fiſſures* of each of the Former,

Former, whereby the Actions of Both are not only distinctly performed, and the extremities of the Fingers attended with the Largest Muscle, (whose Origin is below the *Os Humeri*, wherefore its Extreams cannot approach in the Flexion of the *Cubit*) but their Motions are preserved, though the Superior Muscle is totally divided, which indeed is a Provident Contrivance of the Author of Nature, and is in it self sufficient to excite our Admiration.

67. M. *Lumbricales.*

So called from their Figure, being not much unlike the Common Earth-worms; they are also called *Flexores Primi Internodii Digitorum* from their Use. Anatomists generally derive the Originations of these Muscles from the Tendons of the last treated of; but in a Subject which we lately Dissected I observed part of that Lumbrical Muscle belonging to the Fore-Finger had a distinct Fleshy Original, and a long slender Tendon lying between the Two Preceeding; which suggested to me that the other Three

and

and thoſe of other Subjects have their Beginnings in common with the *Perforans*, and Uniting with its Tendons are afterwards Diſunited again, and growing Fleſhy paſs to their Tendinous Implantations with the *Interoſſei* at the firſt Internode of each Finger externally laterally next the Thumb.

Theſe we ſuppoſe perform thoſe Minute Motions of the Fingers when the Second and Third Internodes are Curvated by the two laſt treated of Muſcles; and therefore Uſed in playing on Muſical Inſtruments, and may be thence Named *Muſculi Fidicinales.*

Bid. T. 69. G.

Extenſor Digitorum Communis, ſeu Digitorum Tenſor.

This has an Acute Tendinous Origination from the outward Extuberance of the *Os Humeri* (20) between the *Extenſores Carpi* becoming Fleſhy, in leſs than half its progreſs its divided into three Portions which become ſo many Tendons (of which the Middlemoſt is the Longeſt) paſſing under their Annular Ligaments between the Lower parts of the *Ulna* (23) and *Radius* (22) march ſeparately *Fig. XI.*

rately over the *Dorſum Manus*, and remitting Tendinous Filliaments to each other as they paſs the Firſt Internodes of each Finger, and are afterwards Inſerted to the ſuperior parts of the Firſt, Second, and Third Bones of the Fore, Middle, and Third Fingers. (28.) *Fig.* xviii.

There being no Force required in the Extenſion of the Fingers, we need not wonder that the Muſcles imployed in that Office are no Larger in Proportion to their Antagoniſts.

The *Proper* Muſcles of the Fingers now offer themſelves to the Knife, which we ſhall Treat of in the Order they are above Named.

Interoſſei Manus.

Theſe are Diſtinguiſhed into External and Internal, They are aptly named from their Situation: Authors diſagree in their Number, ſome reckoning Six, others Eight, amongſt which they eſteem the *Abductor Minimi Digiti* and *Indicis*, but we rather incline to the Firſt Opinion, conceiving the Two latter named Muſcles do not deſerve theſe Denominations. They Ariſe Fleſhy

Internally in the Palm from the ſuperior parts of the Metacarpal Bones (28) next the *Carpus* (27), whence Fig. XV deſcending between the laſt named Bones they become Tendinous at the firſt Internode of each Finger laterally, and paſs to their Inſertions with the laſt Treated of Muſcle. Each Interſtice of the Metacarpal Bones entertaining Two Muſcles Inſerted to the ſides of the Fingers.

When all theſe *Interoſſei* Act together they Draw the Fingers nearer each other, and Aſſiſt in their Extenſion, as *Galen* takes notice, at which time they together with the *Abductor Indicis* and *Minimi Digiti* are capable of Divaricating the Fingers, which Action cannot without ſome Difficulty be performed by them when they are Bended; which Contrivance of the Moſt Wiſe Architect is alſo obſerved by *Galen*.

Lib. i. *De Uſ. par. C.* 18.

Loco ſupra citato.

Ibid. T. 70. not let-ter'd.

Extenſor Indicis ſeu Indicator.

It Ariſes Fleſhy from the middle of the External part of the *Ulna* (23) Fig. XVI next the *Radius* (22), immediately below the *Extenſores Pollicis*, and deſcend-

descending obliquely becomes Tendinous as it passes under its Annular Ligament at the Lower part of the *Radius* and *Carpus* (25), passing over the *Os Metacarpi Indicis*, and joining with the Tendon of the *Extensor Communis*, is Inserted with it to the superior part of the 3d Bone of the Fore-Finger. The Tendon of it is sometimes divided. Its Name Declares its Use. *Fig.* xviii.

id. T.
8. H.

Abductor Indicis.

This is not to be seen till the *Abductor Pollicis* is Raised; by some it is reckoned amongst the *Interossei* as above noted. It Arises Fleshy from the *Os Metacarpi* that sustains the Fore-Finger (28), and descending over the First Internode of the said Finger becomes Tendinous, joining with the Tendon of one of the Lumbrical Muscles, and is Inserted with it together with the Tendon of the former Muscle. Its Name intimates its Use, in Drawing the Fore-Finger from the rest. *Fig.* xvii.

Bid. T. 70. & 71. K, K.

Extenſor Minimi Digiti.

This Ariſes partly Tendinous at the Extremity of the External *Apophyſis* of the *Os Humeri* (20), and Fig. xvii partly Fleſhy from the ſuperior part of the *Ulna* (23), between the *Extenſor Communis Digitorum* and *Muſculus Ulnaris Extenſor*, and becoming Tendinous as it paſſes under the *Ligamentum Annulare* at the *Carpus* (25); it is there divided into Two, ſometimes three Tendons, which are United into one at its Inſertion to the ſuperior part of the 3d Bone of the Little-finger: Its Name Declares its Action.

Abductor Minimi Digiti.

This Appears in ſome Bodies divided into Two or Three Muſcles, having each a differing *Series* of Fibres; The Firſt of which ſeems to be a *Flexor primi Internodii Minimi Digiti*; The Second an *Abductor* of the ſame; The Third *Abductor Secundi* and *Tertii Internodii*: But this Diviſion is not Conſtant, wherefore we

we ſhall Deſcribe it as One Muſcle, leſt we might appear inclinable to multiply their Number, which has been a Vice amongſt ſome. It Ariſes Fleſhy Firſt from the *Ligamentum Tranſverſale*, and Fourth Bone of the *Carpus*; Secondly from the Third Bone of the *Carpus*; Thirdly and laſtly from the ſuperior part of the ſubjacent *Os Metacarpi*: The two Firſt continue Fleſhy to their Inſertions; the Former Terminating at the ſuperior part of the Firſt Bone of the Little-finger forwards, the Latter ending at the ſame part of the ſaid Bone laterally; the Third and Laſt becoming Tendinous like the *Interoſſei*, is Inſerted like them with the Tendon of the *Extenſor Minimi Digiti* at the ſuperior part of the 3d Bone of the Little-finger.

CHAP. XXIX.

Of the Muſcles of the Thumb.

AUthors diſagree concerning the Number, Riſe and Inſertions of theſe Muſcles, which may partly Proceed from that great Variety which may be ſo frequently obſerved in divers Subjects: As they have moſt commonly appeared to me, I ſhall endeavour to Demonſtrate; firſt of the Benders of the Thumb.

Bid. T. 68. L. *Flexor tertii Internodii ſeu Longiſſimus Pollicis.*

This we have frequently obſerved to have a Twofold Beginning; the firſt and ſuperior of which Ariſeth Acutely from the Internal Extuberance of the *Os Humeri* (22) between the *Perforatus* and *Perforans*, becoming a Fleſhy Belly and then Tendinous joins with the Middle Tendon of its other Larger Head: The ſecond or Inferior Origin of this Muſcle (is that part of it which is commonly Deſcribed) A- *Fig.* xvii

riſing

rising with a Double Order of Fleshy Fibres for some space on the *Radius* (25), from immediately below its superior part, which uniting in a middle Line or Tendon (not unlike the *Fibrillæ* of a Feather joining to their *Stamina*) which passing over the Articulation of the *Carpus* becomes entirely Tendinous as it runs over the *Flexor primi & secundi Internodii* to its Implantation at the superior part of the 3d Bone of the Thumb (29): For the better Dissection of the rest of the Muscles of this Part, Raise the *Abductor Pollicis*. Fig. xvii.

id. Tab. 4. I.

Abductor Pollicis.

This Arises Broad and Fleshy from the Internal part of the *Ligamentum Transversale Carpi*, whence Descending lessens it self, and becomes Tendinous at its Implantation to the superior and external part of the second Bone of the Thumb laterally.

This Draws the Thumb from the Fingers, from whence it derives its Name.

Flexor primi & ſecundi Oſſis Pollicis.

This is a Large Diſgregated Fleſhy Muſcle Ariſing from the *Ligamentum Tranſverſale Carpi* Bones of the *Carpus* (27) at the *Baſis* of the *Mons Lunæ* and *Os Metacarpi* (28) of the Middle Finger, whence paſſes to its Inſertion partly to the *Oſſa Seſamoidea* of the ſecond Internode, and partly to the firſt Bone of the Thumb. This may be divided into Three, as *Veſalius* writes, and *Bidloo* has Figured it *Tab.* 68. *M, NN, O O, P.* Its Actions are various according to the diverſity of its *Series* of Fibres; ſo it Bends the Firſt or Second Bones of the Thumb either directly, or obliquely towards the *Carpus*, and *Volam Manus*. Fig. XI.

Bid. T. 71. L.

Adductor Pollicis.

This Ariſes Tendinous in Common with the *Abductor Indicis*, becoming Fleſhy Aſcends obliquely to its Broad Termination at the ſuperior part of the firſt Bone of the Thumb (29). This brings the Thumb nearer the Fore-finger.

The

The reſt of the Muſcles employed in the Motion of the Thumb are Extenders: Though Anatomiſts generally reckon but Two of them, yet it does not occur to our memory we ever found leſs than Three diſtinct Fleſhy Muſcles, neither do the Figures (that ſeem to be done after the Life) in *Veſalius* and *Bidloo* exhibit them otherwiſe.

Extenſor primi Internodii Pollicis.

This Ariſes Tendinous from the upper part of the *Ulna* (23) immediately below the *Supinator Radii brevis*, ſoon growing Fleſhy, and becomes Tendinous again as it Deſcends obliquely over the Tendons of the *Radialis Extenſor*, and is Inſerted to the ſuperior part of the Firſt Bone of the Thumb (27). This we have ſometimes found divided into Two and ſometimes Three diſtinct Muſcles. *Fig.* xviii.

Extenſor ſecundi Internodii oſſis Pollicis.

This Ariſes Broad and Fleſhy from that part of the *Radius* (22) next the *Ulna*

na (23), and becoming Tendinous Fig. x i. passes under the same *Involucrum* with the Tendons of the Former to its Implantation of the superior part of the second Bone of the Thumb.

* *Bid. T. 70. C.*

Extensor tertii Internodii Ossis Pollicis.

This has a Broad, partly Tendinous, but chiefly Fleshy Origination from the *Ulna*, immediately below the Beginning of the *Extensor primi Internodii*, or between it and the *Indicator*, as also from Ligament between the last named Bone and the *Radius*, whence Descending obliquely, becoming Tendinous as it marches in a proper *Sinus* on the inferior Appendix of the *Radius*, wherein its Inclosed by its Annular Ligament, and passes over the Two Tendons of the *Radialis Extensor* to its Insertion at the superior part of the Third Bone of the Thumb.

When this Acts it does not only Extend the Thumb, but Brings it somewhat Backwards, in so much that some can place it on the superior and Back part of the *Ossa Metacarpi*.

CHAP.

CHAP. XXX.

Of the Muſcles of the Wriſt or Carpus.

THeſe are generally well deſcribed by moſt Authors, and receive their Names from their Situation and Uſe.

Flexor Carpi Radialis.

This Ariſeth Tendinous from the Internal Extuberance of the *Os Humeri* (22) Becoming Fleſhy adheres ſtrictly to the *Pronator Radii Teres*, and in half its oblique Progreſs to the *Carpus* (27), it becomes a Flat Tendon which paſſeth over the Annular Ligament, and is Inſerted to the Upper Part of the *Os Metacarpi* (28) which ſuſtains the Fore-finger. *Fig.* xvii.

Flexor Carpi Ulnaris.

This Ariſeth Tendinous from the ſame Tubercle of the Shoulder-Bone with the Former, as alſo from the Superior and External Part of the *Ulna*

(26)

(26) where the *Muſculus Perforans* doth Fig. iii
Ariſe, and continuing Fleſhy according to the length of the *Ulna* is partly Inſerted by a Short, Strong Tendon into the Fourth Bone of the *Carpus*, and partly into the *Os Metacarpi* which ſuſtains the Little Finger.

Their Names declare their Uſe.

Bid.T.69. D.F.

Extenſor Carpi Radialis.

By ſome called *Bicornis* and *Radiæus Externus*. It hath Two Beginnings, and indeed ſeems to be Two diſtinct Muſcles, the Outermoſt Ariſing Fleſhy above the External Protuberance of the *Os Humeri* (20), immediately below the *Supinator Radii Longus*, in its deſcent becomes a Fleſhy Belly, and grows Tendinous above the middle of the *Radius* (22): The other Beginning of this Muſcle is partly Fleſhy and partly Tendinous Below the Former, either from the *Apex* of the Extuberance of the *Os Humeri* or Superior Part of the *Radius*, and continues Fleſhy ſomewhat Lower than the Superior; Both Tendons marching under the *Extenſores Pollicis*, run under the *Ligamentum Annulare*, and are Inſerted

ſerted to the Superior Parts of the *Oſſa Metacarpi* of the Fore, and Middle Fingers. (26.) *Fig.* xviii.

Extenſor Carpi Ulnaris.

This hath an Acute Tendinous Beginning from the Outward Extuberance of the *Os Humeri* (20), and becomes Fleſhy as it Deſcendeth according to the length of the *Cubit*, growing Tendinous again as it marcheth over the Inferior part of the *Ulna* (23), and paſſing under the Annular Ligament, It is Inſerted to the Superior Part of the Metacarpal-Bone of the Little Finger. (26.)

If this Muſcle and the *Ulnaris Flexor* Act, they move the Hand ſideways towards the *Ulna*, and in like manner if the *Radialis Flexor* and *Extenſor* Act, they move it towards the *Radius*. It is well obſerved by moſt Authors, that the Extenders, whether belonging to the Fingers or *Carpus* Ariſe from the Outward Extuberance of the *Os Humeri*, and their Antagoniſts the Flexors, from the Internal Protuberance of the ſame Bone, as alſo from the ſuperior and external part

part of the *Ulna* next the *Anconeus* (above treated of.)

CHAP. XXXI.

Of the Muſcles of the Radius.

THE *Radius* (22) is Moved in Common with the *Ulna*, or *Cubitus* (23), but beſides that, it hath alſo a Proper Motion, in which the *Carpus* together with the Hand is chiefly Moved, or Turned, either Upwards or Downwards, and to this End there are two ſorts of Muſcles: of which ſome are called *Pronatores*, or thoſe that turn it Inwards, and the Palm of the Hand Downwards, and others *Supinatores*, which turn it Outwards, and the Palm of the Hand Upwards. Theſe have their Names from their Figure and Uſe. *Fig.* in *Id.* 26. *Fig.* ni

Veſal. M. T. IV.

Pronator Radii Teres.

By ſome called *Pronator Superior Rotundus*; It Ariſeth Fleſhy from the Internal Extuberance of the *Os Humeri* (22), where thoſe Bending the *Fig.* ri

Carpus

Carpus and Fingers do Arise, and Firmly adhering to the *Flexor Carpi Radialis*, It Descends obliquely Downwards to its Fleshy Insertion, a little above the Middle of the *Radius* (24) Externally. *Fig.* xvii.

Pronator Radii Quadratus.

Or *Inferior Quadratus*, It Ariseth Broad, and Fleshy, from the Lower and Inner part of the *Ulna* (26), and passing Transversly over the Ligament, that joins the *Radius* to the *Ulna*, and is so Inserted to the Superior and External part of the *Radius*. *

Supinator Radii Longus.

This Ariseth Broad and Fleshy from the Superior and External part of the *Os Humeri* (17) three Fingers breadth below the Termination of the *Deltoides*, and Descending obliquely inwards, It gradually lessens it self, and becomes a Flat, Broad Tendon, which likewise grows narrower till it is Inserted to the External and Inferior part of the *Radius* (24) near the *Carpus*. (27.) *Fig.* xviii. *Fig.* xvii.

Supi-

Bid. T. 71. G.

Supinator Radii Brevis.

This Ariſeth partly Tendinous and Fleſhy from the Superior and External part of the *Ulna* (24) next the *Radius*, and paſſing obliquely Tranſverſe over that Bone, is ſo Inſerted to its Superior part below the Prominence of the *Radius*, where the Round Tendon of the *Biceps* endeth. (25.) *Fig.* xvi. *Fig.* xi.

We come next to the Muſcles of the Thigh, Leg, and Foot, though Riolan *ſharply reprehends* Gaſpar Bauhin *in his Animadverſions on his* Theatrum Anatomicum *for Male-adminiſtration of the Muſcles of the Leg before* thoſe *of the Thigh, alledging that thoſe of the Former may be all demonſtrated, and the Latter remain untouched, yet we cannot agree with him in that particular, knowing it to be abſolutely neceſſary to ſeparate diverſe Muſcles of the* Tibia, *as well as to cut off ſome of thoſe moving the* Os Femoris *it ſelf, before we can have a tolerable proſpect of others; eſpecially the* Rotator Femoris Extrorſum. *However ſince ſome Muſcles which belong to the Thigh do Ariſe from the* Vertebræ *of the Back,*

Back, Loins, and Os Sacrum, *we ſhall begin with them Firſt; and then divide the* Os Ilium *from the* Sacrum, *and remove the Trunk of the Body, which Practice is not only convenient for Diſſection, in reſpect the Limb is more eaſily turned to and fro upon the Table, but in publick Demonſtrations is done to avoid an offenſive Scent Apt to ariſe from the Trunk. This done, proceed to diveſt the reſt of the Muſcles of their Common Teguments the Skin, Fat, and Membranes: Taking care that the* Faſcia Membranoſa *of the Thigh and Leg be not wounded, and that you likewiſe take off all the Fat in the* Planta Pedis, *and avoid Cutting the Long Tendon of the* Muſculus Plantaris *as it deſcends internally by the great Tendon of the* Gaſterocnemii *near the* Os Calcis.

CHAP. XXXII.

Of the Muſcles of the Thigh.

AUthors differ in the Enumeration, Deſcription and Office of the Muſcles belonging to this Part. [a] *Galen*, [b] *Veſalius*, and [c] *Columbus* mention Ten, *viz. Pſoas, Iliacus internus, Pectineus, Glutæus major, Glutæus medius, Glutæus minor, Pyriformis, Marſupialis, Triceps*, and *Obturator Externus*; To Theſe *Falloppius* adds another called *Quadratus Femoris*, whoſe Invention *Riolan* pretends, is due to *Sylvius*; and deſcribes another, which he calls *Pſoas parvus*, lying on the Great *Pſoas*. To Theſe **Tho. Bartholin* adds yet another diſtinct from that mentioned by *Riolan*, lying beneath it, having the ſame Fleſhy Beginning about Three Fingers in Breadth, and is ſo Inſerted to the upper Edge of the *Os Ilium* Backwards, where the *Iliacus internus* does Ariſe; This he tells us he found in a ſtrong Muſcular Body in the year 1651; and the following year he ſays he ſaw it with *Michael Lyſerus*, who had

[a] *De Muſ. Cap.* xxxi.
[b] *Lib.* ii. *Cap.* lvi.
[c] *Lib.* v. C. xxviii.
Obſervat. Anatom. Animad. in Theat. Anatom. Bauhini & Anthropog. Lib. v. *Cap* xli.
* *Lib.* iv. *Cap.* xi.

had obſerved it in a Monkey to equal the Great *Pſoas*. That mentioned by *Riolan* we have frequently obſerved, Which, notwithſtanding is abſent in ſome Bodies, as he has well remarkt. But the Latter of *Bartholin* I could never yet diſcover. But if ſuch be found, I conjecture it ſhould rather be referred to the Loins, together with the *Quadratus Lumborum*, of which I ſuſpect it is a Part that may ſometimes be Diſtinct. The like *Luſus Naturæ* we frequently find in other Caſes, of which the *Rhomboides Scapulæ* and *Triceps Femoris* afford us Examples.

Pſoas Parvus.

Though This ought to be counted amongſt Thoſe belonging to the Loins, yet its ſubſerviency to the Great *Pſoas*, & for our better convenience in Diſſection, we chuſe rather to reſerve it for this Place. It Ariſes Fleſhy from the ſuperior part of the Firſt *Vertebræ* of the Loins internally laterally within the *Abdomen*, immediately below the Cavity of the *Diaphragm*, whence deſcending obliquely Inwards towards the *Pelvis Abdominis*

(where it ceaſes to be Fleſhy) in a manner embracing the Great *Pſoas*, and is Inſerted with a Thin, Broad, Strong Tendon, to that part of the *Os Pubis* (40), where it is joined to the *Os Ilium*. This Muſcle with its Partner Acting aſſiſt the *Recti Abdominis* in drawing the *Oſſa Pubis* upwards, as in raiſing our ſelves from a Decumbent Poſture. Thus Rope-dancers hang by their Hands, and Raiſe the Inferior parts of their Bodies to take hold of the Rope with their Feet. Though their proper Action is to bend the Loins, yet their Tendons embracing the Two following Muſcles (which we have frequently obſerved to extend over their inferior parts) not unlike the *Faſcia Tendinoſa Cubiti* and *Lata* of the Thigh, do alſo Corroborate them in their Action. *Fig. x*

Veſal. M. T. 8. Θ. Bid. T. 52. K. K.

Pſoas Magnus ſeu Lumbales.

So call'd from its Situation, Its a Round, ſomewhat Large and Fleſhy Muſcle, Ariſing from all the *Vertebræ* of the Loins (34), and their Tranſverſe Proceſſes (*w x y z*) internally *Fig. ii.*

and

and laterally, within the Cavity of the *Abdomen*; from thence descending over the superior part of the *Os Sacrum* (35), and Spine of the *Ilium* (37), where it's joined with the Fleshy Fibres of the following Muscle; with which its inseparably united at their partly Fleshy and partly Tendinous Insertions in the Inferior part of the lesser *Trochanter* of the Thigh-Bone. (46) *Fig.* xvii.

This assists the Following in its Action.

d.T. 52. *N.*

Iliacus Internus.

This Arises Fleshy from above half the Superior Region, and Internal concave part of the *Os Ilium* (36), and in its descent over the Inferior part of the last named Bone (40), joins with the Former, and is Inserted with it as above-said, partly under the Termination of the Following. This together with the Former move the Thigh Forwards in Progression.

igel. L. T. 31. *t* letter'd.

Pectineus.

So called from its beginning at the *Os Pubis* or *Pectinis* (38). It has a

Thick, Broad, and Fleſhy Origination from the External part of the ſaid Bone, between the Two laſt deſcribed Muſcles and ſecond Head of the *Triceps*, and Deſcending Obliquely Backwards it becomes a flat ſtrong Tendon near its Implantation to the Aſperity (37) on the Poſterior part of *Fig.xvi* the *Os Femoris*, immediately below the Leſſer *Trochanter*, at the Inſertion of the Two Former Muſcles.

This Acting together with the Two Preceeding, do not only Draw the *Os Femoris* Upwards, but directs it Outwards, by its Curve deſcent from its Origination to its Inſertion at the poſterior part of the *Os Femoris*; which is a Provident contrivance of Nature in Walking ſince the Thighbones by their Oblique poſition do thereby render the Toes liable to turn Inwards. Theſe Three laſt treated of Muſcles, beſides the *Recti Abdominis* and *Pſoi parvi*, ſeem to ſerve for the Inflexion of the Body, and Direct the whole Limb, to wit, the Thigh, Leg, and Foot outward in a more Graceful Step.

The

The Musculus Membranosus *presents it self next to the Knife; therefore must be Raised before we can gain a View of the rest which move the Thigh bone. This may be done, either by cutting it from its Fleshy Origination at the point of the Spine of the* Os Ilium (37), *and turning it Downwards; or after its well cleared of the Skin, Fat, and Membranes, it may be Raised contrarywise by cutting off its Tendinous Insertion at the superior* Appendix *of the* Fibula (53), *and Freeing it from all the Muscles of the* Tibia, *and leaving it at its Origination: Either of these being done, proceed to Raise the* Pyriformis *from its Origin within the* Pelvis *of the* Abdomen (40), *and part of the Fleshy Beginning of the* Glutæus Major *from the External part of the* Os Sacrum (34) *and* Coccygis (0). *The Body then being laid in a Supine Posture, and the Legs Divaricated; with a Thin Knife divide the* Os Ilium (36) *from the* Sacrum (35.)

Fig. xvii.

Fig. xviii.

Fig. xvii.

Veſal. T. 9. Π. *T.* 10. K. *Spigel. T.* 29. *L.* 4. *GG.*

Glutæus Major.

So called from its being the largeſt Muſcle of thoſe which compoſe the Buttocks It has a large Semicircular Beginning; Forwards meerly Tendinous, from near two Thirds of the External Part of the Spine of the *Os Ilium* (30); Backwards its Origination is Thick and Fleſhy from the Poſterior part of its Spine, and hindmoſt part of the *Sacrum* (34) laterally, and whole *Os Coccygis* (O) as alſo from a Broad Ligament that's extended between the two laſt Named Bones and Tubercle of the *Os Iſchium* (31); its Fleſhy Fibres Deſcending Diſgregately in an almoſt ſemicircular manner become Tendinous as they approach the Great *Trochanter* (40), where its United with its Firſt deſcribed Tendinous Beginning, Deſcending over the External part of the Great *Trocanter*, after being joined with the Tendon of the *Membranoſus*, proceeds to cover and ſtrictly Embrace all the External Muſcles of the *Tibia* like the External Tendon of the *Biceps* Thoſe of the *Cubit*: But the other part of it *Fig.* xv

it proceeding from the Fleshy Body of this Muscle, is largely Inserted to the *Linea Aspera* (37) on the Back part of the *Os Femoris*, near Four Fingers breadth below the Great *Trochanter*. *Fig.* xviii.

The first described Tendinous Beginning of this Muscle doth not only serve to support its Fleshy Body, but its Fibres Intersecting those of the *Membranosus* as they cover all the Muscles of the *Tibia*, do more adequately include them, whereby they are corroborated in their Action. When this Muscle Acts it pulls the Thigh directly Backwards.

Glutæus Medius.

sal. M. 10. Σ. d. T. 72. F. Spi- l. T. 29. 4. L L.

This lies chiefly under the Tendinous beginning of the Former Muscle, and Arising Fleshy from almost the whole External part of the Spine of the *Os Ilium* (30), in its Descent becomes Thicker and Fleshy, and is Inserted by a short strong Tendon to the Superior and External part of the Great *Trochanter* (40) in a Semicircular manner.

If the differing *Series* of Fibres in this Muſcle are rightly conſidered, their Poſition will manifeſt they are not ſo Uſeful in Extending the Thigh as Authors would perſwade us, but rather imployed in Turning it Inwards. This will plainly Appear if in the time of Diſſection you give the Thigh that motion, you then may obſerve the Forepart of this Muſcle notably relaxt. And in living Perſons when the Thigh is turned inwards, you may ſee it Tumified; or if in performing that Action with your own Thigh you lay your Thumb on this Muſcle, you may feel it contract or Move under the Skin. Beſides its being partly uſeful in Extending the Thigh with the former Muſcle, it is alſo imployed in divaricating the Legs, it co-operating with the *Muſculus Membranoſus* in that Action.

Veſal. M. T. 11. *Z. Spigel. T.* 30. *L.* 4. *GG.*

Glutæus Minor,

Lies totally under the Former Muſcle, it being ſo much leſs than the Former, as the Former is the Precedent; It ariſeth Semicircular, Broad and Fleſhy, from the

Dor-

Dorſum Ilii (29); from hence its Fleſhy Fibres deſcend to their partly Tendinous, and partly Fleſhy Inſertion like the Former, at the Superiour part of the Root of the great *Trochanter* (40). *Fig.* xviii.

The Fibres of this running Parallel, with thoſe of the Former, aſſiſt it in all its Actions: Whatſoever Authors have ſaid concerning an *Obturator Femoris introrſum*, we are well aſſured, that there is no other Muſcle imployed in that Action, but the Foreparts of theſe Two only. They alſo aſſiſt in rendering the Articulation of the Thigh Bone, with the *Coxa*, more Stable in ſtanding Erect.

Pyriformis ſeu Iliacus Externus.

Val. M. Vo. b. Szel. 29. L. 4. M. It receives its Firſt Name from its Figure, the Second from its Situation; its beginning is Round and Fleſhy from the Inferiour and Internal part of the *Os Sacrum* (35), where it reſpects the *Pelvis* of the *Abdomen*, and deſcending obliquely in the great *Sinus* of the *Os Ilium* (35), above the Acute Proceſs of the *Iſchium*, and joyning with the *Glutæus Medius*, its Inſerted *Fig.* xvii. *Fig.* xviii.

Inſerted by a Round Tendon to the Superiour part of the Root of the Great *Trochanter* (39). This moves the *Os Femoris* ſomewhat Upwards, and turns it Outwards. *Fig.xv*

Spigel. L. 4. T. 29. 22.

Marſupialis ſeu Burſalis.

So called from its Tendinous running thorough (as it were) a Second Fleſhy Beginning of it ſelf, which Duplication repreſents a Purſe; It is alſo called *Obturator Internus* from its Situation, and not from its Uſe, as ſome have imagined. It Ariſeth Broad and Fleſhy, from that part of the *Os Ilium, Iſchium* (31), *Pubis* (33), and Ligament that is extended in the Great *Foramen* (36), of the two laſt named Bones internally, and marching Tranſverſly in the *Sinus* of the *Iſchium*, (fenced on each ſide by two Proceſſes, the one Acute (32), the other Obtuſe (31), where it is Externally Fleſhy, but Internally it hath Three, ſometimes Four Tendons paſſing in ſo many diſtinct Furrows in the ſaid *Sinus*, like ſo many Cords in a Qadruple Pulley, where it meets with the other Fleſhy Beginning, commonly

monly called its *Marſupium*, ariſing from the above-mentioned Acute and Obtuſe Proceſſes, which joyning with the ſaid Tendons at their united Inſertion to the Superiour part of the Root of the Great *Trochanter* near the Implantation of the Former Muſcle (39). *Fig.* xviii.

throp. *Riolan* makes two Mufcles of the *v.* *Marſupium*; which Error is taken no- *p.* 41. tice of by * *Marchette*, who thinks *natom.* the *Marſupium* a contrivance of Na- *p.* xix. ture, whereby the Motion is confirmed, and the Subjacent Tendons defended from too great a preſſure.

When this Muſcle Acteth, its Inſertion is directed towards that part of the *Iſchium*, over which its Tendons run after the manner of a Pulley, and the *Os Femoris* is thereby turned Outwards.

igel. T. *Quadratus Femoris.*
). L. 4.
it let- *t'd.*

So called from its Figure; it Ariſeth Broad and Fleſhy from the *Apophyſis* of the *Os Iſchium* (31), and paſſes Tranſverſly, with an equal Breadth and Thickneſs to its partly Fleſhy and partly Tendinous Inſertion at the Poſteriour

Poſteriour part of the *Os Femoris*, partly below the Great *Trochanter*.

This Aſſiſts the Former Muſcle in turning the Thigh-Bone outwards. The next Muſcle belonging to the Thigh, which appears as the Back part of it, lies Uppermoſt, is the largeſt Beginning of the *Triceps*, which, (contrary to others) we reckon the Firſt Head of that Muſcle.

Veſal. M. T. 12. Z. Spigel. T. 32. L. 4. A A D D. C.

Triceps.

So called from its Three Heads or Beginnings, the Firſt and Largeſt of which Ariſeth Broad and Fleſhy from the Inferiour Edges and External parts of the *Os Iſchium* and *Pubis*, where they are joyned to each other (33) lying between the *Semitendinoſus* and *Semimembranoſus*, and that of the *Gracilis*, and Deſcending with an Oblique Order of Fleſhy Fibres, is Inſerted partly Tendinous and Fleſhy near an Hands Length in Breadth to the *Linea Aſpera* of the Thigh-Bone (37), that is immediately below the Inſertion of the Former Muſcle; Its Inferior part making a Strong Round Tendon Inſerted into the Superior Part of the In-

Fig. xvii

Internal and Lower *Appendix* of the Thigh-Bone (47). The Second Head or Beginning of this Muſcle Ariſeth Tendinous from the *Os Pubis* (38), but in its Deſcent ſoon becomes Fleſhy, and joins with the Former, near to its Inſertion to the Middle part of the *Linea Aſpera* of the Thigh-Bone (37). The Third and Laſt Beginning of this Muſcle ſpringeth from the Inferior part of the *Os Pubis*, between the Origination of its Laſt Deſcribed Head, and That of the *Pectineus*, and Deſcending obliquely joins with the Firſt, near its Inſertion to the *Linea Aſpera* of the Thigh Bone, immediately above the Termination of the Second Head of this Muſcle. *Fig.* xvii. *Fig.* xviii.

This moves the Thigh variouſly according to the Diverſity of its Beginnings, ſo the Firſt deſcribed part of it pulls the Thigh-Bone Upwards, Inwards, and ſomewhat Backwards; The Second and Third Beginnings of it Pulls it more Inwards, and turns it ſomewhat Outwards, as when we put our Legs a-croſs each other.

Obtu-

Spigel. T. 32. L. 4. M.

Obturator Externus.

So called from its Situation, and *Rotator Femoris Extrorſum* from its Uſe; It hath a Large Fleſhy Beginning from the External parts of the *Os Iſchium* (39) and *Pubis* (38) and Membrane that covers their *Foramen* (41) Externally, oppoſite to the Origination of the *Marſupialis* or *Obturator Internus* (already deſcribed) and paſſing tranſverſly Backwards, leſſens it ſelf, and becomes Tendinous at its Inſertion to the Root of the great *Trochanter* of the Thigh-bone (39) near the Termination of the Laſt named Muſcle. This turns the Thigh Outwards. *Fig. xv* *Fig. xvi*

CHAP. XXXIII.

Of the Muſcles of the Leg.

[a] *De Muſ. C. xxxii.* [b] *Lib. ii. Cap. liii.* [c] *Lib. v. C. xxix.* [d] *Lib. iv. C. xxxii.*

[a] *Galen*, [b] *Veſalius*, [c] *Columbus*, and [d] *Spigelius*, deſcribe Ten Muſcles which move the *Tibia*, namely, *Membranoſus*, *Sartorius*, *Gracilis*, *Semineroſus*, *Semimembranoſus*, *Biceps*, *Rectus*, *Vaſtus Externus*, *Vaſtus Internus*, and *Popli-*

Popliteus: To these *Jacobus Sylvius, Laurentius,* and latter Authors add another Muscle lying between the two *Vasti* and call it *Crureus:* Of These we reckon the first seven as *Common* both to the Thigh and Leg, they Arising either from the *Os Ilium Pubis* or *Ischium,* and are Inserted into the *Tibia* or *Fibula,* in Moving of which they move the Thigh also: The other are *Proper* Arising from the *Os Femoris* only, and Inserted to the *Tibia.*

Membranosus.

So called from the large Membranous Expansion it is Continuous with, including all the Muscles of the *Tibia* and *Tarsus*; whence it is also called *Fascia Lata:* It hath an Acute Fleshy Beginning from the Forepart of the Spine of the *Os Ilium* (37) between the Origination of the *Sartorius* and Tendinous Beginning of the *Glutæus Magnus,* and being dilated to a Fleshy Belly which fills the Interstice made by the First of the two Last named Muscles and Upper part of the *Rectus* and Forepart of the *Glutæus Medius*; *Fig.* xvii.

in its Oblique Deſcent becomes Tendinous, Four Fingers breadth below the great *Trochanter* (45), whence it Fig. xvii paſſes directly over the *Vaſtus Externus* to its proper Termination, at the Superior *Appendix* of the *Fibula* (53), but in its progreſs thither it is Conjoined with the Tendinous Expanſion of the *Glutæus Magnus* which Ariſeth from the Spine of the *Ileum* (30) co- Fig. xvii vering the External part of the *Glutæus Medius* and all the External Muſcles of the *Tibia* as well as thoſe of the Thigh-bone; and Deſcending over the *Patella* comprehends the Muſcles of the *Tarſus*, and joins with the *Ligamentum Annulare*, which retains the Tendons of the Toes and Foot: Unleſs it may be ſuppoſed that the ſaid *Faſcia lata* ſhould end at the Lower part of the Thigh-Bone or Superior parts of the *Tibia* and *Fibula*, and that the laſt named Bones ſhould give an Origination to the Inferior part of the ſaid *Faſcia*, which ſeems to be a Matter more of Controverſie than Uſe. When this Muſcle Acteth, the Leg and Thigh are Drawn outwards; its Tendon being joined with part of the *Glutæus Maximus*, and having a different Se-

ries

ries of Fibres interfecting each other, do thereby, compoſe a ſtrong *Involucrum*, as well including all the *Common* Muſcles of the Leg, as covering the *Proper*; whereby they Corroborate them in their Action, as the Tendinous Expanſion of the *Biceps Cubiti* doth Thoſe of the *Carpus* and Fingers.

Veſal. M. 1. i. o. Spigel. T. 4. L. 4. d A.

Sartorius.

It receives this Denomination from the Uſe Taylors make of it in bringing one Leg and Thigh over the other to ſit croſs Leg'd; It is alſo called *Longiſſimus Femoris*, it exceeding the reſt of the Muſcles of that Part in Length, and *Faſcialis* from its paſſing over the Muſcles of the Thigh and Leg like a Swathe. It Ariſeth Sharp and Fleſhy from the Forepart of the Spine of the *Os Ilium* (37) cloſe by the Former Muſcle, and Deſcending obliquely inwards above the *Muſculus Rectus* and *Vaſtus Internus*, and over part of the *Triceps*, of an equal Breadth and Thickneſs, meets with the *Gracilis* below the Middle of the Thigh internally, and Deſcending with it becomes Tendinous in its Paſſage over *Fig.* XVII.

the Internal and Inferior Head of the Thigh Bone, (under a ſtrict Incloſure of the above deſcribed *Faſcia Lata*) and is Inſerted Four Fingers Breadth below the Superior part of the *Tibia*, internally (44). Its uſe is declared above. *Fig.* xviii

Veſal. M. T.1.P.Spigel.T.34. L.4.F.F.

Gracilis.

So called from being the moſt ſlender of theſe Muſcles; It Ariſeth ſomewhat Broad, partly Tendinous and partly Fleſhy from the *Os Pubis* (38) internally, between the Firſt and Second deſcribed Heads of the *Triceps*, and in its Streight Deſcent in the Inſide of the Thigh grows narrow, and becomes Tendinous a little above the Former Muſcle, and is ſo Inſerted (immediately beneath it) to the *Tibia*. (44.) *Fig.* xvii. *Fig.* xvii

It Aſſiſteth the Former and Following Muſcles in bending the Thigh and Leg inwards.

Veſal. M. T. 9. t t. Spigel. T. 33. L. 4. L.

Seminervoſus ſeu Semitendinoſus.

Which is ſo called from its being half Tendinous, and Nerve-like. It Ariſeth

Ariſeth partly Tendinous and partly Fleſhy from the External part of the Protuberance of the *Os Iſchium* (31), Fig. xviii. and preſently being Dilated to a Large Fleſhy Belly, becomes a Round Tendon in half its progreſs, which Deſcending over the Fleſhy Belly of the Following Muſcle, marcheth cloſe by the *Gaſterocnemius* on the Poſterior part of the Superior *Appendix* of the *Tibia*, from whence it paſſes Forwards to its Inſertion in the ſaid Bone immediately Below the Termination of the Former Muſcle. (44.)

This with the Former Muſcle Acting, Bend the *Tibia* directly Backwards. Its Tendon together with the two Former and following Muſcles make the Inward Hamſtrings, as they are commonly called.

eſal. M. 9. u u. pigel. T. 3. L. 4.

Semimembranoſus.

So called from its being half Tendinous and Membrane-like; lying immediately under the former Muſcle. It Ariſeth Broad and Tendinous from the Protuberance of the *Os Iſchium*, and in its Deſcent becomes broader, and in leſs than half its Progreſs be-

gins to grow Fleſhy, (where the Belly of the Former Muſcle leſſens it ſelf) and is dilated into a Large and Fleſhy Belly, lying under the Long Round Tendon of the Former, becoming a Short Thick Tendon Inſerted to the ſuperior part of the Upper *Appendix* of the *Tibia* Backwards. *N. B.* That the Fleſhy Belly of the former Muſcle is above; and That of *This* is Below, and their Tendons on the contrary.

Veſal. M. T. 9. f. T. 10. Y. Spigel. T. 33. Lib. 4. M. V. T. X.

Biceps.

Or *Biceps Femoris* to diſtinguiſh it from *That* of the *Cubit*: It having Two Heads, the ſuperior and longeſt of which Ariſeth with a Round Tendon from the ſame Protuberance of the *Iſchium*, as the Two Former, in its Deſcent becomes Large and Fleſhy, and in above half its progreſs leſſens it ſelf again, where it is joined with its other Head, having a Broad, partly Tendinous and partly Fleſhy Beginning from the *Linea Aſpera* of the *Os Femoris* (37), immediately below *Fig.* xviii. the Termination of the *Glutæus Maximus*; it being thus united grows Tendinous, as it marcheth in a Channel

on

on the External *Appendix* of the *Os Femoris*, becoming perfectly Tendinous at its Implantation to the Superior *Epiphysis* of the *Fibula*. (47.) *Fig.* xviii.

Besides the Office commonly assigned to this Muscle in Bending the *Tibia* together with the Two Former, it is likewise imployed in turning the Leg together with the Foot and Toes outwards, when we sit with the Knees Bended.

esal. M. 14. *T.*

Popliteus.

By some called *Subpopliteus*, It Ariseth with a Short, Strong Tendon from the External Head of the Inferior *Appendix* of the *Os Femoris* (42), from whence descending obliquely over the Juncture becomes Fleshy, and Expanding it self is so Inserted to the Superior part of the *Tibia* internally immediately below its Superior *Appendix* (44). This doth not only Assist the Three Former Muscles in Bending the *Tibia*, but Antagonizeth the Precedent by turning the Foot and Toes outwards in that Position of the Leg as before Noted.

Veſal. M. T. 1. S. Spigel. T. 34. L. 4. a a id. T. 35. A A. E E.

Rectus Femoris.

Is named from its ſtreight Progreſs and Situation, it Ariſeth Fleſhy from a Tubercle of *Os Ilium*, that is in the Mid-way between the Forepart of its Spine and the *Acetabulum* †, from thence deſcending directly between the two following Muſcles and over the *Crureus*, Its Fibres Externally Deſcend from a Middle Line obliquely Laterally; internally they run according to its Length, and become entirely Tendinous Four Fingers breadth above the *Patella*, where it is united with the Tendons of the three following Muſcles, and Inſerted together with them at the Upper part of the *Tibia*. (50.) *Fig.* xv *Fig.* xvi

Veſal. M. T. 1. r. id. T. 2. r. Spigel. T. 35. L. 4. G G.

Vaſtus Externus.

So called from its Magnitude and Situation, It Ariſes outwardly Tendinous, Inwardly Fleſhy from the External part of the great *Trochanter* (45); and *Linea Aſpera* of the Thigh-bone (37), from whence its Fibres Deſcend Obliquely Forwards, and on *Fig.* xvii. *Fig.* xviii.

the

the contrary become outwardly Fleshy and Tendinous Internally, and so soon as They meet with the Tendon of the Former Muscle, grow perfectly Tendinous, and join with it and that of the two Following.

Vastus Internus.

esal. M. i. t. igel. T. 5. L. 4. L.

This like the Former hath its Denomination from its Situation and Magnitude; Its Beginning is Large, partly Tendinous, and partly Fleshy; it being continued from the *Linea Aspera* on the Back part of the Thigh-bone *(37)*, from immediately below the Lesser *Trochanter*, till within Three Fingers Breadth above the Inferior *Appendix* of the said Bone Internally Laterally; from hence its Fleshy Fibres Descend obliquely outwards in an almost Semicircular manner, and on a sudden (like the Former Muscles) ceasing to be Fleshy, its Tendon is United with that of the *Rectus*, together with the Former and following Muscles, and Inserted with them. *Fig.* xviii.

Cru-

Veſal. M. T. 5. II. Spigel. T. 35. L. 4. KK.

Crureus ſeu Femoreus.

So called from its Situation on the Bone of the Thigh, like the *Muſculus Brachiæus*, on that of the Arm; Its Origination is Large and Fleſhy, being continued from between the Greater and Leſſer *Trochanter* of the Thigh-bone Forwards (42), to its Lower part, that is Immediately above its Inferior *Appendix*, Its Fleſhy Fibres deſcending directly, and become perfectly Tendinous a little below the Upper part of the Tendon of the *Rectus*, where it joins with it, and the Tendons of the Two Laſt Deſcribed Muſcles, which paſſes over the External part of the *Patella*, (or on each ſide of it) and is Inſerted to a Prominence at the Superior and Forepart of the *Tibia*. (50.) *Fig.* xv.

Theſe Four Muſcles laſt treated of, *viz.* *Rectus Vaſtus Externus*, *Vaſtus Internus*, and *Crureus*, may be eſteemed *One*, in regard they make but one Tendon at their Inſertion, and ſerve for the ſame Uſe in Extending the *Tibia*, or Leg, however they are divided into ſeveral Bodies, and one of them is

In-

Incloſed on all ſides by the *Faſcia Lata*, namely the *Rectus*, and in themſelves have a Multiform *Series* of Fleſhy Fibres, whereby they are rendred capable of Performing their Office with greater ſtrength, which is abſolutely neceſſary not only in Running, Walking, Leaping, *&c.* but in Standing to keep the Body Erect, by oppoſing that Flexure at the Knee, which muſt otherwiſe neceſſarily happen through the ſuperincumbent Preſſure. For this reaſon likewiſe we find theſe Extending Muſcles in ſo great a proportion Larger than their Antagoniſts the Benders, which appeared by their Weight, when at the Requeſt of my very good Friend Dr. *Brown*, (now Reader on the Muſcular Diſſections at Chyrurgeons-Hall) theſe Extending Muſcles were weighed, and their Antagoniſts the Benders in the ſame Body, whereby we found the Former exceeded the Latter, two Pounds wanting an Ounce; The Former, namely the *Extenſores*, weighing Three Pounds ſix Ounces, and their Antagoniſts the Latter but One Pound ſeven Ounces. Should it be inquired, (ſince it is ſo Apparently neceſſary in moſt,

moſt, if not All Motions of the whole Body that the Leg ought to be Extended with great Force, it being Bended to ſupport its own weight only) Why the Muſcles employed in that Action ſhould all Terminate in one Tendon, when their Antagoniſts the Benders have Divers Inſerted on both ſides the Bones of the Leg; whereby *They* have a greater advantage in doing their office than that one ſingle Inſertion of the Extenders? It may be Anſwered, that ſuch a Structure is not only for the Beauty of the Part, but it is neceſſary that the Tendons of the Former ſhould be United into One near their Inſertions, and that a Bony Body, ſuch as is the *Patella*, ſhould be placed on the Articulation of the Thigh-bone with the Leg to defend it from being preſt on, in going down ſteep places, which could not have been done, had *They* been divided and Inſerted on each ſide of the Bones of the Leg like the Flexors, which is a Stupendious Device in Nature.

CHAP.

CHAP. XXXIV.

Of the Muſcles of the Foot or Tarſus.

L v. C. xxx. Orvat. Atom. *Columbus, Falloppius,* and other Anatomiſts reckon Eight Muſcles belonging to each Foot, rejecting *Veſalius* his Ninth, it being part of the *Extenſor Digitorum longus* that is Inſerted to the Metatarſal-bone of the Little Toe: but *Spigelius,* * *Veſlingius,* and latter Authors making of their two firſt the *Gaſterocnemius Externus* and *Gaſterocnemius Internus* One, giving it the name of *Gaſterocnemius Externus* only, and call its ſubjacent Muſcle *Gaſterocnemius Internus,* which former Anatomiſts had named *Soleus,* have reduced their Number to Seven in each Foot, whoſe Example we ſhall follow.

L iv. C xiv. * xix.

Vol. M. Tr. ε ζ. Spel. T. 3 L. 4. F i. GG C. Bid. T 3. E. *Gaſterocnemius Externus, it. Gemellus.*

So called becauſe (with the *Soleus* or *Internus* of that name) it compoſes the Calf of the Leg: it is alſo called *Gemellus* from its being as it were double.

double. It has two Diſtinct Fleſhy Originations from the Superior and Hindmoſt parts of each Tubercle of the Lower Appendage of the Thigh-bone (42), which in their deſcent are each dilated into two large Fleſhy Bellies; The innermoſt of which is Thickeſt and Largeſt, having each a differing *Series* of Fleſhy Fibres, and join to each other near where they make a Broad Strong Tendon, which narrowing it ſelf joins with the great Tendon of the *Gaſterocnemius Internus*, four Fingers breadth above its inſertion to the *Os Calcis*. (49.) *Fig.* xi.

Lib. v. *Cap.* 43. *Riolan* aſſerts, with *Veſalius*, that in the two Beginnings of this Muſcle there are two *Offícula ſeſamoidea*, which we muſt acknowledge with *Marchette* have hitherto eſcaped our Obſervation, though its likely it may be ſo in Aged Bodies, as it appeared in a Subject I lately Diſſected on One Side only.

When this Muſcle Acts the Foot is ſaid to be Extended or Pulled Backwards, which motion of it is very neceſſary in Walking, Running, Leaping, and ſtanding on Tiptoe, *&c.* Hence it is thoſe that Walk much have theſe Muſcles Larger than others, through

through the frequent uſe of them, and amongſt which thoſe that carry Heavy burthens, and eſpecially Sedans or Chairs in this Town; and Thoſe who wear Low-heeled Shoes have theſe Muſcles remarkably larger than Others.

Vul. M.
T. 3. Φ.
Sol. T.
3. L. 4.
F. 2.
I K.

Plantaris.

So called from its Tendon expanded in the *Planta Pedis* like that of the *Palmaris* in the Palm of the Hand. It Ariſes Fleſhy from the Superior and Back-part of the outermoſt Tubercle of the Lower Appendage of the Thigh-bone (42) immediately under the External Beginning of the Former Muſcle, and Deſcending Obliquely between it and the Following, ſoon becomes a Thin Flat Tendon, which paſſing out from between Their Fleſhy Bellies deſcends internally laterally, by their great Tendon; and marching over the *Os Calcis* (49), expands it ſelf on the Soal of the Foot, where it firmly adheres to the Fleſhy Body of the *Muſculus Flexor Digitorum Perforatus*, and is Inſerted on both ſides the firſt Internode of each leſſer Toe. The Action of this Muſcle is very obſcure,

Fig. xviii.

Fig. xviii.

obſcure, its Tendinous Expanſion on the Bottom of the Foot being chiefly ſerviceable in defending the ſubjacent Muſcles, Tendons, Nerves, and large Bloud Veſſels, from being Compreſt in Standing, Walking, *&c.* We have ſometimes obſerved that the Fleſhy Beginning and long Tendon of this Muſcle is wanting.

Veſal. M. T. 14. Λ Λ. Spigel. T. 38. L. 4. Fig. 2. M M. Bid. T. 84. F.

Gaſterocnemius Internus.

This is placed under the two former Muſcles; It's alſo called *Soleus* from its Figure; reſembling a Sole-Fiſh: its External Fleſhy part is covered with a Tranſparent Tendinous expanſion, which makes it appear of a livid Colour. Its Beginning is partly Tendinous, but chiefly Fleſhy from the hindmoſt part of the upper *Appendix* of the *Fibula* (47), and Back-part of the *Tibia* (45), that is below the Inſertion of the *Subpopliteus*, and increaſing to a large Fleſhy Belly compoſed of Various Orders of Fleſhy Fibres, ſome of them underneath aptly expreſſing the Figure of the top of a Feather, whoſe *Stamina* here being Tendinous join with the great Tendon which *Fig.* xvi

which is about four Fingers breadth in length, and Inserted to the Superior and Hindmost part of the *Os Calcis.* (49.) *Fig.* xviii.

The Foot, together with the Toes, being as it were a Leaver to the whole Body, ought therefore to be attended with Muscles of great strength to Extend it; wherefore we find these Muscles so much to exceed their *Antagonist* the *Tibæus Anticus*, as well in the advantageous construction of their differing Series of Fleshy Fibres, as their Magnitude and Insertion at the extremity of the *Os Calcis*: whereby *they* are not only rendered serviceable in Walking, Running, Leaping, *&c.* but do also support the *Tibia* in standing, lest the superincumbent Pressure of the Weight of the Body should make them incline forwards at their Articulations with the *Talus*.

Tibialis Anticus.

Cal. M.
i. Z.
igel. T.
.NNO.
3. 2.
d. T. 80.
T. 81 E.

So called from its situation on the Forepart of the *Tibia*, its also by *Spigelius* called *Musculus Catenæ*, because when it is divided the Patient is forced to use a Sling to support the

Foot in Walking. Its Origination is Fleſhy from the Lower part of the Superior Appendage of the *Tibia* (50) *Fig.* xvi between its Prominence, where the great Tendon of all the Extending Muſcles of the Leg is Inſerted, and the Origination of the *Muſculus Extenſor Magnus Digitorum Pedis*: it alſo continues a Diſgregated Fleſhy Origination for near two Thirds of the Superior part of the ſaid *Tibia* Externally lateral next the *Fibula* (52); which Compoſing a Fleſhy Belly leſſens it ſelf in Half its Progreſs, and growing into a Strong and ſomewhat Round Tendon deſcending obliquely over the Inferior Part of the ſaid *Tibia*, and under the Annular Ligament, is Inſerted to the inſide of the *Os* * *Cuneiforme Majus* (57) that ſuſtains the 53. *Os Metatarſi Pollicis*. * *F.* xvii

This pulls the Foot Upwards and Forwards Directly.

Veſal. M. T. i. ſ. *Spigel. T.* 40. *F.* 2. *C D. Bid. T.* 81. *E.* 82. *C.*

Peroneus primus.

By ſome it is called *Longus* it being the Firſt that offers it ſelf to view; and the longeſt Muſcle ſeated on the *Fibula* or *Os Perone* (56). It *Fig.* xvii

Ariſes

Ariſes Externally Tendinous, and Fleſhy Internally from above half the Superior part of the ſaid Bone, and marching ſomewhat Backwards becomes a Strong, Flat Tendon, Four Fingers breadth in Length above the Inferior Appendage of the ſaid *Fibula* called *Malleolus Externus* (48), paſſing behind which in a Channel like a Rope in a Pully, and from thence being inflected forwards together with the Tendon of the following Muſcle, they paſs under an imbanding Ligament as they run over the *Os Calcis*, but this Tendon declining from its companion marches over the * *Os Cuboides* (51) under the *Muſculus Abductor Minimi Digiti*, and over the *Oſſa Cuneformia* in the bottom of the Foot, and under the Tendons and Muſcles Bending the Toes, and is Inſerted to the Superior and Hindmoſt part of the *Os Metatarſi* of the Great Toe. Fig. xviii. * F. xvii. 60.

The Tendon of this Muſcle being conveyed over the Hindmoſt part of the *Malleolus Externus* (44), as on a Pully, is an elegant contrivance in Nature, whereby the Ball of the great Toe (as that part is commonly Fig. xviii.

called to which It is Inſerted) is directed towards a Perpendicular bearing of the Weight of the Body on the Leg in ſtanding on Tip-toe by pulling the Foot and Toes ſomewhat outwards.

Veſal. M. T. 6. V. Spigel. T. 40. L. 4. F. 2. EEF. Bid. T. 82. B.

Peroneus Secundus.

By ſome called *Semi-fibulæus*: It has an Acute Fleſhy beginning above the Middle of the External part of the *Fibula* (46) under the Fleſhy Belly of the Former Muſcle, it alſo continues its Fleſhy Beginning from the Poſterior Sharp Edge of the ſaid *Fibula*, and Becoming a Fleſhy Belly grows Tendinous as it runs under the *Malleolus Externus* (48) together with the Tendon of the former Muſcle, and is inſerted to the Superior and External part of the *Os Metatarſi* of the Little Toe. *Fig.* xvi *Fig.* xvi

The proper Action of this Muſcle is to pull the Foot and Toes outwards.

Tibiæ-

Bid. T.
35. G.
Vesal. M.
T. 15. D
i.

Tibialis Posticus.

This being placed on the Back part of the *Tibia*, is also called *Musculus Nauticus*, because Mariners chiefly use it in climbing up the Masts of their Ships. It lies partly under the *Flexor tertii internodii Pollicis*, which Muscle must be partly raised, together with the *Flexor tertii internodii Digitorum Pedis*, before we can have a clear sight of it. It appears Biventral, Arising partly Tendinous and partly Fleshy from the Superior and Back-part of the *Fibula* (47), as also from the Ligament that is continued between the said Bone and the *Tibia* (45), in near half its progress it becomes less, and grows Fleshy again, and making a Strong Round Tendon which runs in a *Sinus* on the back-part of the lower Appendage of the *Tibia* called the *Malleolus Internus* (51) under an Annular Ligament, and is inserted to the *Os Naviculare* (54) internally and laterally.

Fig. xviii.

Fig. xvii.

Fig. xviii. *Fig.* xvii. 56.

This draws the Foot upwards and inwards.

CHAP. XXXV.

Of the Muſcles of the Great Toe.

THe great Toe is moved by its Proper Muſcles, which we reckon to be ſix in number, namely, *Extenſor Pollicis Longus*, and *Extenſor Brevis*, *Flexor Pollicis Longus*, and *Flexor Brevis*, *Adductor* and *Abductor Pollicis*; Though Anatomiſts commonly mention but Four of *theſe*, yet we have obſerved *them* in ſeveral Diſſections to be ſo many Diſtinct Muſcles as they are Accurately Figured in *Bidloo*. To theſe may be added the *Muſculus Tranſverſalis Placentini*, which our above-mentioned Author and ſome others make to be an *Adductor Pollicis*, But we take it rather to be an *Adductor Minimi Digiti*, Wherefore it ſhall be deſcribed in the following Chapter.

Tab. 81, *&* 82.

Veſal. M. T. 4. 14. *Spigel. T.* 40. *L.* 4. *F.* 2. *L.* *Bid. T.* 81. *H. T.* 82. *C.*

Extenſor Pollicis Longus.

This Muſcle doth not Ariſe as moſt Deſcribe it, from the *Tibia*, or from

from the Ligament between it and the *Fibula*. It's Beginning is Large and Fleshy from the Fore-part of the *Fibula* (52) from immediately below its superior *Appendix*, to Four Fingers Breadth above the Inferior one, and Descending under the *Ligamentum Annulare* of the *Tarsus*, between the Tendon of the *Tibialis Anticus* and those Tendons of *Extensor Pedis Longus*, and marching along the superior part of the Foot, Is Inserted to the Upper part of the Second Bone of the Great Toe (63). Its Name Intimates its Use. *Fig.* xvii.

Bid. T. 32. not etter'd.

Extensor Pollicis Brevis.

Though this Muscle is not mentioned by Anatomists, yet we constantly observe it in Dissection, It hath been rather taken for part of the *Extensor Digitorum Brevis*, but we frequently find it Distinct.

It Ariseth Fleshy from the Forepart of the *Os Calcis* (61), being Dilated into a Belly, soon becomes a Long, Slender Tendon, passing obliquely over the upper part of the Foot, and is Inserted to the superior part of the

Second Bone of the Great Toe, which it Extends or Pulls Upwards.

Bid.T.84. not let-ter'd. *TT.85.K.*

Flexor Pollucis Longus.

This is a direct Antagoniſt to the *Extenſor Longus*, It Ariſes oppoſite to it from the Back-part of the *Fibula* (46) with a double Order of Fleſhy Fibres, running to a Middle Tendon, (like the *Flexor tertii internodii Pollicis Manus* above) which ceaſeth to be Fleſhy as it paſſes over the Juncture, and runs through a Channel on the Internal part of the *Os Calcis* (49) under the Tendon of the *Muſculus Flexor Digitorum Longus Perforans* over the Following Muſcle, and is Inſerted to the Upper End of the Second Bone of the Great Toe. *Fig.* xvii

Bid. T. 86. F. i. not let-ter'd.

Flexor Pollicis Brevis.

Is Short, Thick, and Fleſhy, ſeemingly divided into Two Muſcles by the Tendon of the Former paſſing over it. It Ariſeth from the ſuperior part of the *Os Cuneforme medium* (58), and running over the Termination of *Fig.* xvii.

the

the *Musculus Peroneus*, is Implanted into the *Ossa Sesamoidea* of the Great Toe, who are likewise Tied to the superior part of the Second Bone of the said Toe, which it Bends.

lid. T.
6. F. 2.
C.

Abductor Pollicis.

This Ariseth Fleshy from the *Os Calcis* internally Laterally, in half its Progress becoming Tendinous, it joins with another Fleshy Beginning, springing from the *Os Cuneforme majus* (57) *Fig.* xvii. that sustains the *Os Metatarsi* of the Great Toe; both which making one Tendon, are Inserted to the External part of the *Os Sesamoides* of the Great Toe Laterally.

This pulls the Great Toe from the rest.

d. T.
. F. 2.

Adductor Pollicis.

*. xix.

This is Described and Figured by * *Veslingius*, It is also mentioned by *Marchette*, It ariseth partly Tendinous and partly Fleshy from the Inferior parts of the *Os Cuneforme Tertium* (59), and Dilating it self to a Fleshy Belly, marcheth obliquely in the bottom of the

the Foot, and becomes leſs and Tendinous at its Inſertion to the Internal part of the *Oſſa Seſamoidea* of the Great Toe laterally, oppoſite to the Termination of the Former.

This Brings the Great Toe nearer the reſt.

CHAP. XXXVI.

Of the Muſcles of the Four Leſſer Toes.

THeſe (like the Muſcles of the Fingers) we ſhall divide into *Common* and *Proper*.

The *Common* Muſcles of the Toes are ſuch as have their Tendons Inſerted into all the Leſſer Toes, as the *Extenſor Digitorum Pedis Longus*, *Extenſor Brevis*, *Perforatus*, and *Perforans*. The reſt are the *Proper* Muſcles of the Toes, namely, *Lumbricales*, *Abductor Minimi Digiti*, *Tranſverſalis Placentini*, and the *Interoſſei*: Of theſe in their Order.

Exten-

Extenſor Digitorum Pedis Longus.

eſal. M.
i. α β.
id. T.
2. D.

This hath an Acute Fleſhy Beginning Externally from the Inferior part of the Upper *Appendix* of the *Tibia* (50) next the *Fibula* (53), as alſo a Long Fleſhy one from the Superior part of the laſt named Bone, and leſſening it ſelf in half its Deſcent on the Leg, it joins with a Second, Broad, Diſgregated Fleſhy Beginning, continued for near half the Inferior part of the ſaid *Fibula*, where Deſcending under the *Ligamentum Annulare* of the *Talus*, it is divided into Five Tendons, Four of which are Inſerted to the Third Bones of all the Leſſer Toes; The Fifth to the ſuperior part of the *Os Metatarſi* of the Little Toe, which part of it *Veſalius* makes his Ninth Muſcle belonging to the Foot. *Fig.* xvii.

b. ii.
p. lx.

Extenſor Digitorum Brevis.

ſal. M.
6. Ω.
dloo T.
. F.

This is a ſhort Fleſhy Muſcle lying under the Tendon of the Former on the Foot. It Ariſeth Fleſhy from the External and Forepart of the *Os Calcis* (61), ſoon Dilating it ſelf to a

Fleſhy

Fleſhy Belly, which being divided into Four Fleſhy Portions becomes ſo many Tendons, paſſing over the Upper part of the Foot, and making Acute Angles with the Tendons of the Former Muſcle as they run over the Firſt Internode of each Leſſer Toe to their Inſertions at the ſuperior parts of their Second.

Veſal. M. T. 14. ⊙. Spigel. T. 42. F. 2. C. D. Bid. T. 85. I.

Perforatus.

So called becauſe its Tendons are Perforated like Thoſe of the Fingers. It is alſo called *Flexor Secundi Internodii Digitorum Pedis*, from its Uſe and *Sublimis* from its Situation, It ſpringeth from the Inferior and Internal part of the *Os Calcis* (49) between the *Muſculi Abductores* of the Greater and Leſſer Toes. Dilating it ſelf to a Fleſhy Belly after it hath paſſed the middle of the *Planta Pedis*, it is divided into four Fleſhy Portions, which become ſo many Tendons, and are divided near their Terminations to Admit the Tendons of the following Muſcle to paſs through them to their Inſertions; Theſe being United again, paſs underneath them to their *Fig. xvi*

Im-

Implantations at the Upper part of the Second Bone of each Leſſer Toe.

ſal. M.
15. P.
d. T.
. H.

Perforans.

So called becauſe its Tendons run through the Fiſſures in the Tendons of the Former, It is alſo called *Flexor tertii Internodii Digitorum Pedis* from its Uſe. It hath an Acute Fleſhy Origination from the Back-part of the *Tibia* (45) immediately under the *Muſculus ſubpoplitæus*, having a double order of Fibres united in a middle Tendon like the *Flexor Pollicis Longus*, but ceaſeth to be Fleſhy as it paſſeth behind the *Malleolus Internus*, and running in a Channel over the Internal part of the *Os Calcis* (49) under it, Imbanding Liguments in half its Progreſs through the Sole of the Foot, it is divided into Four Tendons which march thorow the perforations of the Tendons of the Former Muſcle, and are Inſerted to the Third Bone of every Leſſer Toe. *Fig.* xviii.

Lum-

Spigel. T. 42. F. 3. FF. Bid: T. 86. FF. Bid. T. 86. F. 1. FF.

Lumbricales.

So called from their Figure like thoſe of the Hand, and though Anatomiſts have generally deſcribed them Ariſing from the Tendons of the laſt treated of Muſcle, yet we rather think the *Carnea maſſa* in the *Planta Pedis*, is their true Origin, It ſpringing from the Internal part of the *Os Calcis*, and becoming Tendinous joins with the Tendons of the Former Muſcle, in the middle of the Sole of the Foot, Then dividing it ſelf into Four (as it were) diſtinct Fleſhy Muſcles, they all become Tendinous at their Inſertions to the Internal parts of each Leſſer Toe Laterally next the Great Toe.

Spigel. T. 42. Lib. 4. F. 3. K M. Bid. T. 86. F. 2. B.

Abductor Minimi Digiti.

This Ariſeth outwardly Tendinous, inwardly Fleſhy from the External part of the *Os Calcis* (49), becoming Tendinous in half its progreſs on the outſide of the Foot, it joins with the other Fleſhy part of this Muſcle Ariſing Fleſhy from the Outſide of the *Os Metatarſi* of the Little Toe (57), and *Fig.* xvii

and making one Tendon at its Insertion to the Upper part of the First Bone of the Little Toe Externally Laterally.

Transversalis Pedis.

So called from its Transverse Situation. It Ariseth Tendinous from the Internal *Os Sesamoides* of the Great Toe, and becoming a Fleshy Belly in its Progress over the First Internodes of the two next Toes, it is Lessened at its Insertion to the Inferior part of that Metatarsal Bone which supports that Toe next the Lesser.

Its Use is to bring the Lesser Toe towards the Greater.

To *this* may be Added a *Flexor Primi Ossis minimi Digiti*, though some reckon it amongst the following *Interossei*, yet its situation doth not deserve that Name. It Ariseth Fleshy from the Superior part of the *Os Metatarsi Minimi Digiti*, and passes directly to its Insertion in the First Bone of the Lesser Toe. In the Tendon of *this* and the *Interossei*, the *Ossa Sesamoidea* of the Lesser Toes are entertained.

In-

Spigel. T. 43. L. 4. F. 2. D D CC. Bid. T. 86. F. 3. AAA.

Interoſſei Pedis.

Theſe are reckoned to be Seven in Number, They derive their Names from their Situation, and may each deſerve a Proper Appellation from their Uſe. The Firſt may be called an *Adductor Minimi Digiti.* The Second, which is the Largeſt, draws the next Toe towards the Leſſer, and may be called *Abductor Auricularius.* The Third Antagniſes the Former, and is an *Abductor* of that Toe. The Fourth may be called *Abductor Medii Digiti.* The Fifth is an *Adductor* of the ſame. The Sixth is an *Adductor*, and Seventh *Abductor Indicis Pedis.* All theſe Ariſe Fleſhy from the Superior part of the *Oſſa Metatarſi* of the Leſſer Toes (62), *Fig. xv* and becoming Bellied grow Tendinous at their Inſertions to the Firſt Internode of each leſſer Toe laterally.

AN

AN APPENDIX:

Containing a Deſcription of the Penis, *and the manner of its* Erection.

Regnerus De Graaf in his Elaborate Treatiſe of the Organs of Generation, has Accurately Deſcribed this Part; and *Fredericus Ruyſch* in his late *Anatomical* and *Chyrurgical Obſervations* Demonſtrated the Structure of its *Glans*, which the Former has not ſo well Obſerved; to which I ſhall add what upon a ſtrict Enquiry on this Subject has given me occaſion to diſcover.

I ſhall not here repeat thoſe many Synonimous Appellations which Laſcivious Wits, or over ſedulous Authors have Invented. The *Penis* is an Organ Contrived by the Author of Nature for the Ejection of the Seed, and Emiſſion of Urine, compoſed of certain Spongy or *Cavernous Bodies* with their *Veſſels* and *Integuments*, of which in their order. Firſt

of its External or Common Containing Parts, as the *Cuticula*, *Cutis* and *Membrana Carnosa*.

The *Cuticula*. In the *Cuticula* we could never Observe any considerable difference from that of other Parts, except on the *Glans*, where we find, by the assistance of a Microscope, that its Exterior surface appears Villous or Downy.

The *Cutis*. The true Skin or *Cutis* (*AA*) in *Fig.* x. This and the *Scrotum* is much Thinner than we commonly find it in other Parts; and both have a peculiar disposition of their *Bloud Vessels* (*KK*): the *Arteries* are called here *Pundenda*, which Arising from the External Branch of the *Illiac*, and running under the Superior part of the Skin of the *Penis*, divide themselves into many Branches, the larger of which are still subdivided, till they become Capillary; from whose Extremities are continued so many *Veins*, which again uniting into larger Branches, do pass into those that partly Arise from the *Corpora Cavernosa Penis*, and marching under the Common Integuments, do empty themselves into the upper part of that continued from the *Saphena Vein* of the Foot; These for

di-

distinction we call *Venæ Præputii.* (*K.*) Fig. x.

he
mphe-
cts.

Besides the Bloud-Vessels now mentioned, it has *Lymphe-Ducts* (*LL*) which I had first an opportunity of observing by Injecting this Part with *Prepar'd Mercury*; which confirms the Opinion of *Schelhamer*, and the Accurate *Nuck*, concerning the Origin of these *Ducts*: But whether they Arise here from that part of the *Canalis Sanguineus* call'd the *Artery*, or the *Vein*, did not appear from my Experiment; since I made Injection into both promiscuously: I observed divers Trunks on each side, passing under the Common Integuments accompanying the *Venæ Preputii*, which do (as I suspect) afterwards empty themselves (like those Arising from the Inferior Parts) into the *Glandulæ Inguinales.* This Contemplation may serve to Inform us how the Morbid matter comes to be conveyed more particularly to those *Glands* in Venerial Cases, and Cause those *Tumors* that frequently happen on that occasion, commonly called *Buboes*; which Conception is the more confirmed, by observing those *Phænomena* that are previous to that

Effect, as *Ulcers*, and *Inflammations* on the *Prepuce*, and by the too early Use of Astringent Topicks; which probably may inspissate the Refluent *Lympha*, and render it unfit to pass through those *Vesiculæ Glandosæ* into their exporting *Lymphe-Ducts*; from which obstruction begun a *Tumor* may Arise; Hence an Account may be also given how soon the Malignity may be sometimes conveyed into the *Mass* of *Bloud*, by the common passages of the *Lympha*; and a very good Reason offer'd for the Practice of opening those *Tumors* before the usual time of *Suppuration*.

The *Glandulæ Odoriferæ*.

In that part where the *Præputium* is contiguous to the *Balanus*, my very good Friend that Judicious Anatomist, Dr. *Tyson*, has Discovered certain small *Glands* (*a a*); which he calls from the great scent their separated Liquor emits, *Glandulæ Odoriferæ*: their Number is uncertain; in those that have the *Præputium* longer than ordinary, they are not only more, but also larger, and separate a greater quantity of their Juice, which being lodged there, often grows Acrid and corrodes the *Glans*. They are very conspicuous *Fig.* x.

ous in moſt Quadrupeds, particularly in Dogs and Boars, in the latter of which; their ſeparated Liquor is contained in a proper *Ciſt*, at the Verge of the *Præputium*; out of which there is a large Aperture, whereby it's remitted again to lubricate the *Penis* of that Animal.

The *Membrana Carnoſa*.

The Third Common Tegument is the *Membrana Carnoſa*. This Part commonly wanting Fat for divers Reaſons. Firſt, leſt its Erection into that neceſſary Stiffneſs ſhould be thereby hindered; Secondly, leſt it ſhould be too Bulky; and laſtly, it would have dull'd the Pleaſure the Male is affected with in Venery. But whether theſe conſiderations induced the Author of Nature to Frame this Part without a *Membrana Adipoſa* does not appear, ſince its want of Fat may not unlikely depend on its great Alteration, from that Flaccidity when it is not *Erected* to that Extenſion of it when it *is*. In the Former, though we can conceive no great obſtacle why its *Adipoſe Cells* ſhould not be ſupplied with their Oyl, except its too great laxity ſhould retard the Influent Bloud in its paſſage through its *Capillary*

pillary Arteries; yet in the Latter its great Extenſion may not unlikely Compreſs them to void their contain'd Oyl; which may be the cauſe why the Interſtices of the Muſcles and other Parts moſt quieſcent are ſubject to be fill'd with Fat. And in the *Penis* it ſelf in Children before *Erection* has been frequent, I have obſerved its *Membrana Adipoſa* to be extended with fat; but afterwards though the Membrane remains, yet the Increaſe of Fat is hindered, and therefore we find it commonly without; yet in ſome Subjects, and thoſe Adult too, I have found it almoſt cover'd with Fat; But what inconvenience the Party ſuffer'd when Living, was not my Fortune to be acquainted with.

The Ligaments, firſt, *Frænum.*

I come next to take notice of its *Ligaments*; firſt of that called the *Frænum* (*a*) which ties the *Prepuce* to the lower part of the *Glans* (*A*). This in ſome we have found ſo ſhort, that we have been obliged to divide it to procure a compleat Erection; in others I have been obliged to do the like, where a *Cicatrix* has been made after large Ulcers on it, which frequently happens in Venerial Infections. *Fig.* xi

The

The *Ligamentum suspensorium Penis.*

The next *Ligament* which I shall speak of, I call *Suspensorium*; although it has escaped the Observation of Anatomists, yet it's very conspicuous, and of remarkable Use; of which hereafter, when we come to give an Account how this Part becomes *Erected.* It Ariseth from the Anterior Part of the *Ossa Pubis,* and is fixt to the Upper part of the *Dorsum Penis* (*cc*) on each side its great Vein (I). *Fig.* x. The rest of the Ligaments are such as compose its *Capsulæ* or divide them as their *Septums*; These we shall mention in Treating of its Internal or Contained Parts, which are, the Two *Corpora Cavernosa Penis,* the *Corpus Cavernosum Vrethræ*, Their *Septums*, *Muscles* and *Vessels,* of which as they appear in Dissection.

The *Arteries.*

First of the Vessels that carry Bloud to it, *viz.* the *Arteries* (*GG*). These Arise sometimes from the *Rami Iliaci interni,* at other times from the Inferior parts of the *Umbilical Arteries*; whence an Account may be given why this Part is less than usual by tying the Umbilical Rope too close to the Belly, and that not only from the retraction of the *Uracus,* but by

the conſtricture attending theſe Arteries by the great Extenſion of the Umbilical ones, from whom They have their Riſe; whereby may be denied that plenty of Influent Bloud; but this we leave to future Obſervation. As theſe *Arteries* paſs towards the *Penis*, they ſend forth Two or Three Branches on each ſide, the Two Inferior of which (*gg*) run to the *Muſculi Directores Penis*: The Two Superior (*hh*) adminiſter Bloud to the Adjacent Parts, particularly to the *Muſculi Elevatores Ani*, between which and the *Marſupiales Femorum*, theſe great Trunks paſs, but marching over the Cavernous Bodies of the *Penis*, They are both ſubdivided into Two large Branches, the Two Inferior of which (*ii*) paſs to the *Bulb* of the Cavernous Bodies of the *Urethra*, but the Two Superior (*kk*) are both ſubdivided again, the External (*dd*) running on the ſuperior ſurface of the Cavernous Bodies of the *Penis*, the Internal (*ll*) entering the *Capſulæ* paſs through the middle of each Cavernous Body (*DD*), wherein they divide themſelves into innumerable Branches (*CC*) from whoſe Capillary extremities

Fig. x.

Fig. xi.

Fig. xv.

are

The Veins. are continued ſo many Veins, in the Cannals of which are divers Apertures into as many Cells (*D*) which communicate with each other, and empty themſelves into the larger Venous Ducts (*E*), running on the ſuperior ſurface of the *Penis*, ſome of which joins with thoſe of the *Prepuce*; others make one large Trunk which we call *Vena ipſius Penis* (*I*), marching on the *Dorſum Penis* immediately under the Ligament that ties the *Oſſa Pubis* together internally; whereby its Compreſt in *Erection*, as ſhall be hereafter Demonſtrated, but proceeding further on the *Proſtatæ*, it is there Bifurcated, and enters the *Rami Illiaci interni* on each ſide. The *Veins* which ariſe (in like manner) from the *Corpus Cavernoſum Urethræ* paſs from its *Bulb* through the *Muſculi Acceleratores* (*C C*), whereby they are compreſt when thoſe Muſcles are in Action. *Fig.* xvi. *Fig.* x. *Fig.* xii.

rves. The *Nerves* (*H H*) that belong to this Part, are derived from the Trunk compoſed by the coalleſcion of the Third of the *Os Sacrum*, and a Branch remitted from the Great *Crural Nerve*; which after their union provide *Nerves* *Fig.* x.

for

for the *Teſtes*, *Perinæum*, and Muſcles of this Part, aſcending on the *Cavernous Bodies* of the *Penis*, and expanding themſelves on its ſuperior ſurface (*c c*), are diſtributed to all its Parts. *Fig.* x. Its *Lymphe-Ducts* we mentioned in deſcribing its External Integuments, wherefore we proceed next to its *Cavernous Bodies*.

The *Corpora Cavernoſa*.

The *Corpora Cavernoſa Penis* (*BB*), *Fig.* x. *i.* by *De Graaf* called *Nervoſa*, by others *Nervea ſpongioſa*: are Two *Capſulæ* or oblong *Folliculi* every where outwardly fenc'd with a Thick Membrane, by [a] *Veſalius* and [b] *Columbus* ſuppoſed to be like Ligaments, whoſe External ſurface is cover'd with *Nerves* and *Bloud-Veſſels* as is Repreſented (*d d e e*); *Fig.* x. They ſpring with Two diſtinct Originals from the Lowerſide of the *Oſſa Pubis*, whence ſtretching forwards meet each other, leaving an Interſtice before their Conjunction, in which the *Urethra* (*F*) is conveyed: where they leave the *Oſſa Pubis*, they are each cover'd with a Membrane, and are afterwards joined to each other by the intervention of a *Septum intermedium*, which the nearer it approaches the *Glans*, is more diminiſht (*a*), and *Fig.* xiii before *Fig.* xii. *GG.*

[a] *Lib.* v. *Cap.* xiv.
[b] *Lib.* xi. *Cap.* xv.

The *Septum intermedium*.

before it arrives to the middle of the *Penis*, its Fibres Aſcend from the *Urethra* (*B*) to the *Dorſum Penis* (*de*) like the Teeth of a Comb, as *De Graaf* has well obſerv'd: but is not obliterated, and the two Cavernous Bodies united near the *Glans*, as he would perſuade us; but on the contrary rather grows Thicker and Narrower (*a*), as *Ruyſch* has well obſerved. In Inflation the Wind I confeſs may ſometimes paſs from theſe Cavernous Bodies of the *Penis* to that of the *Urethra*; which yet will not always happen; which communication, depends on the Mediation of their *Bloud Veſſels*, as our laſt named Author alſo takes notice. Anatomiſts differ concerning the Internal conſtructure of theſe *Cavernous Bodies*: *Veſalius* accuſes *Galen* for his inadvertency herein. *Columbus* firſt obſerved their *Arteries*, which proceeding ſtreight to their Extremities, diſperſe themſelves into innumerable Branches; which eſcaped the Obſervations of Former Anatomiſts, as he writes. Dr. *Whorton* imagines they are partly compoſed of Glandulous Fleſh: others conceive They are intertext with divers *Nerves*, from

Fig. xii. *Fig.* x. *Fig.* xiii.

heir Internal ubſtance.
ib. v. *ap.* xiv.
ib. vii. *De Corde & Arter.*

from whence the Names of *Nervosa* was first imposed on them. *Diemerbroeck* supposes they are not a meer Texture of Vessels intricately interwoven in the manner of a Net, as *Bauhinus*, *Riolan*, and *Veslingius* imagine, but their substance is Fibrous, Fungous, and Cavernous, like the Lungs, receiving into their hollow Interstices Bloud and Spirits from the Vessels that are dispersed through their substance. The Enquiries I have made inform me, that there is a great Analogy between the Internal structure of This and that of the *Spleen*, which *Columbus* also remarks; in both which the sides of the *Veins* have large Apertures or *Cells*, which most plainly appear in the *Bulbus* of a Dogs *Penis* (*DE*): but in a Humane one they are here much less, and larger in the *Spleen*, and do also open into each other; wherefore when the Refluent Bloud is stopt, the *Penis* becomes equally Distended thereby, and it is driven forwards towards the *Glans* when its Muscles Contract.

Lib. xi. *Cap.* xv.

Fig. xvi.

The *Corpus Cavernosum Urethræ.*

Under these *Cavernous Bodies* of the *Penis* lies the *Urethra* (*B*), which has also its *Corpus Cavernosum* differing very

Fig. xii.

very much in Figure from that of the Two Former; they being leſs at each End, and Largeſt in the Middle, whereas this on the contrary is there Leaſt, and Largeſt at its Two Extreams: neither is its Proper Tegument ſo Denſe. The ſuperior Part of it lying between the Two *Crura* of the Former, we call from its Figure *Bulbus*, which is covered with the *Muſculus Accelerator Urinæ* (*CC*) (deſcribed *Chap.* III.). It poſſeſſes the Lower part (*E*) of the *Urethra* (*D*), extending it ſelf in the *Perinæum*, and is divided in Cutting for the Stone, in which Operation caution ought to be had to its Arteries which enter that part of the *Bulb* towards the *Anus* laterally. It has alſo a *Septum intermedium* (*a*) (though not hitherto taken notice of by Anatomiſts) dividing the Right ſide of the *Bulbus* (*A*) from the Left, which Deſcending to the end of the Bulbous Part, is there obliterated. The Office of this *Septum* we conceive is to direct the Refluent Bloud to the exporting *Ducts*, its Two Veins mentioned before. As this *Corpus Cavernoſum* deſcends on the Inferior Part of the *Urethra* (*D*) it is leſ-

s Bulbus. *Fig.* xii. *Fig.* xiv.

s Septum.

leſſened (*E*), but when it approaches the Extremities of the Two Former, it again Dilates it ſelf and covers them, Compoſing that Body which we call *Glans* or *Balanus* (*A*), which *De Graaf* had miſtaken for a Fleſhy ſubſtance diſtinct from either. This *Ruyſch* has well deſcribed and Figured in his above-mentioned *Century of Obſervations*. Its *Cells* (*C*) in the *Glans* (*B*) are much leſs than thoſe of the Former, but towards its ſuperior Part or *Bulbus* (*A*) they equal Them. Having already deſcribed the Muſcles of this Part, we ſhall proceed to give an Account how It becomes *Erected.*

Fig. xiv.

The *Glans.*

Fig. xii.

Fig. xiii.

Fig. xiv.

Galen and the Former Anatomiſts not knowing the *Circulation of the Bloud,* or that it paſt from the Arteries into the Veins, were extreamly deceived in their Ideas of the *Erection* of the *Penis*. *Columbus*, who has given an almoſt compleat Deſcription of that Grand Work, ſtill conceiveth the Arteries of this Part pour out Spirits with a great force into It by which means its Extended. *Caſpar Bauhin* ſuppoſes in a Venerial Appetite the Bloud and Spirits flow into this

Lib. xi. *Cap.* xv.

Lib. i. *C.* xxxii.

this Part in great plenty, and being fill'd like a Gut with Wind, it begins to ſwell, and grows hard, which he imagines is done by a *Sphincter* Muſcle Conſtringing the Neck of the Bladder and roots of its Cavernous Bodies. *De Graaf* aſſigns two kinds of Veſſels with its Muſcles for the performance of this Office; The *Nerves* by which the Animal Spirits flow into its Membranous Parts, and render them more Rigid and Tumid; and the *Arteries* carrying Bloud to diſtend the *Corpora Cavernoſa*, for, as 'he Reaſons, we are 'firmly perſwaded the chief Extenſion 'of the *Penis* is from Bloud, firſt by 'Injecting Water into its *Corpora Ca-'vernoſa*, by its *Arteries*, in a Dead Bo-'dy, we ſee it Extended to the ſame 'dimenſions as when the Animal was 'living: Secondly, in firmly tying a 'Dogs *Penis in Coitu*, and afterwards 'examining it, we find nothing but 'Bloud to Diſtend it. To which may be added, that in Criminals which Hang long after Death, this Part becomes Erected, the Bloud in that Poſition of the Body falling to the Inferiour Parts: And by Inflateing the Bloud Veſſels of

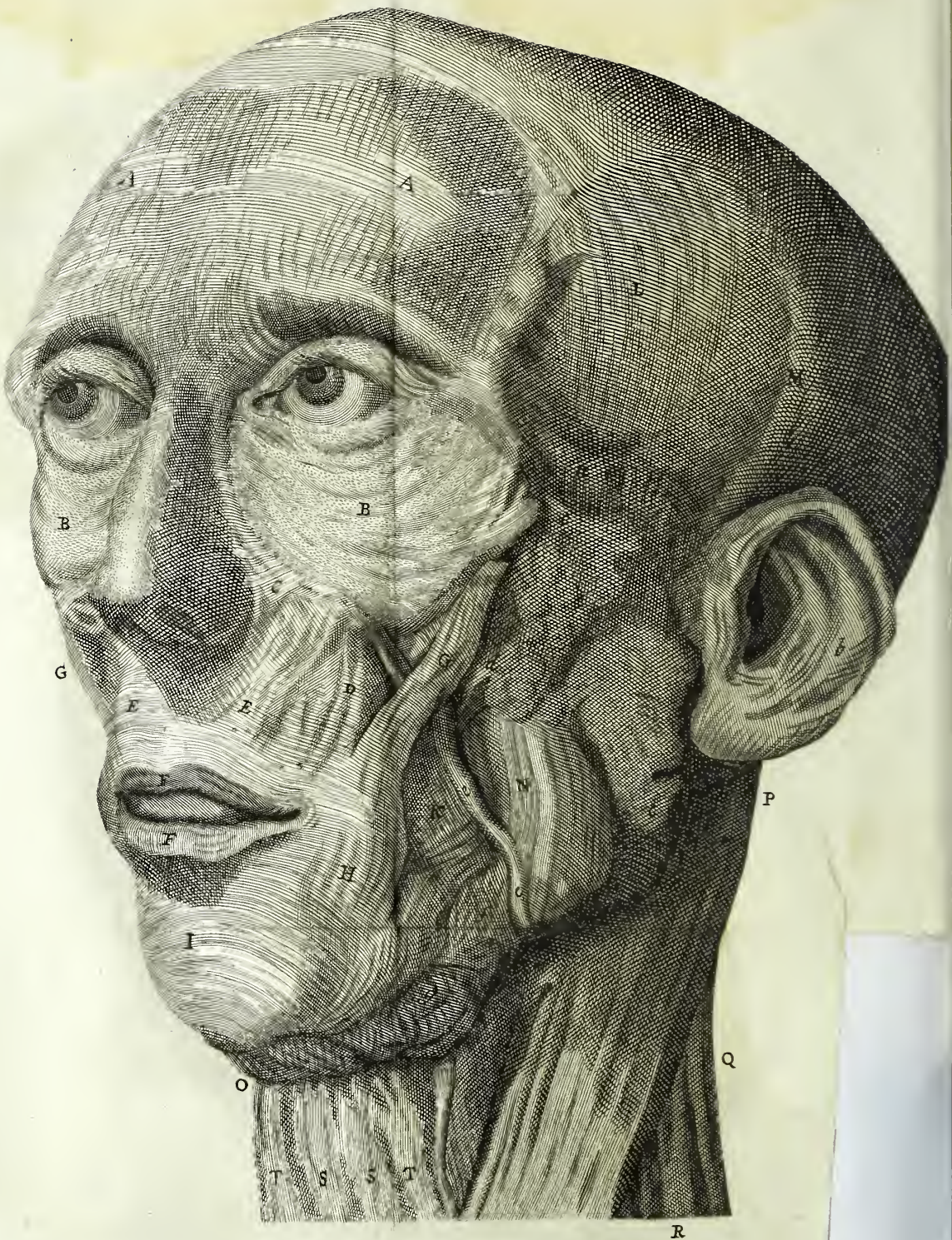
a Dead Animal It will alſo *Erect*; which we firſt practiſed in a Human Body by inſerting a Blow-pipe into the *Saphena Vein*; whereby it was not only Erected, but afforded a proſpect of the External diſpoſition of its Bloud Veſſels, particularly its *Veins*, which ſuggeſted to us a Contrivance in Nature in this Action which has hitherto eſcaped the reflection of Anatomiſts. *De Graaf* not conſidering the Uſe of the Adjacent Parts, aſſigns its Erection to its Muſcles; Imagining, that by the Intumeſcence of their Bellies they not only compreſs the *Corpora Cavernoſa*, and drive the contained Bloud towards the *Glans*, but likewiſe the Paſſages through which it ordinarily Flowes back; which latter, we can by no means admit in the *Cavernous Bodies* of the *Penis* it ſelf, ſince the *Muſculi Erigentes* are ſo remote from their Great Vein. Our *Hypotheſis* founded upon the Obſervation abovementioned, and compared with the Structure and Situation of its Parts is as follows. The *Penis* is approximated to the *Oſſa Pubis* when thoſe Muſcles

Muſcles Act by means of the *Ligamentum Suſpenſorium*, whereby the Bloud is not only driven Forwards towards the *Glans* in greater plenty, and its Veins diſtended, but their great Trunks running over the *Dorſum Penis*, are Compreſt as they march cloſe under the *Ligamentum Tranſverſum* of the *Oſſa Pubis*. The like cannot happen in the *Cavernous Body* of the *Urethra* ſince there is no Bone whoſe Poſition can have that effect upon its Veins, as the *Oſſa Pubis* hath upon thoſe of the *Penis* it ſelf; wherefore the *Muſculi Acceleratores* Compreſſing Thoſe of its Bulb do that Office: hence it happens in an imperfect *Erection* the *Glans* is not equally Extended with the *Penis* it ſelf, and at other times is ſooneſt Relaxt; But when thoſe Muſcles Act, the Bloud contained in the *Bulb* is driven forwards towards the *Glans*, whereby it becomes more Extended; ſo in a piece of Gut, which if fill'd with Wind or Water, and either end Compreſt the oppoſite being ty'd, we ſhall ſee it ſtrut out and be more diſtended, as *De Graaf* inſtances after *Caſpar Bauhin*. The Bloud thus hinder'd in its return, Diſtends the *Cavernous Bodies* which are thereby Erected; the *Arteries* which before

were flaccid, having then their Trunks alſo extended, do more plentifully Import Bloud into this Part. But ſince it is abſolutely neceſſary ſome part of the detained Bloud ſhould be ſtill paſſing off, leſt it become Grumous and unfit for a Reflux; to this end the *Venæ Præputii* are joined to thoſe of the *Penis* it ſelf, as above noted, and are placed under the Skin only, and running over the *Oſſa Pubis* carry off part of the Impell'd Bloud, to give way to a freſh ſupply from the *Arteries*, and preſerve the *Circulation* uninterrupted. I remember once in an obſtinate *Priapiſma* which would not yield to ordinary repeated *Phlebotomy*, I opened the *Vein* of the *Penis* it ſelf, not without the expected ſucceſs, it immediately looſing its troubleſom Rigidity, by which I was confirmed in my Conjecture.

This elegant contrivance in diſpoſing theſe *Exporting Sanguiferous Ducts*, that ſome are liable to be Compreſt whilſt others remain altogether Free, is not only obſervable in the *Penis* of *Men* and *Clytoris* of *Women*, but in that of all Animals which have hitherto fell under our Examination, as well as in the *Pudenda* of all Females; and is indeed an Artifice that deſerves our Admiration. THE

Fig: I .



THE EXPLICATION OF THE FIGURES.

FIG. I.

REpreſenteth the Muſcles of the Face, the *Quadratus Genæ* being remov'd.

AA, The *Muſculi Frontales.*

BB, The *Orbiculares Palpebrarum.*

C, The *Muſculus Retractor Alæ Naſi*, conjoined with the *Elevator Labii ſuperioris Proprius EE.*

D, The *Elevator Labiorum Communis.*

EE, The *Elevator Labii ſuperioris proprius.*

FF, The *Sphincter Labiorum.*

GG, The *Muſculi Zygomatici.*

H, The *Depreſſor Labiorum.*

I, The *Depreſſor Labii Inferioris proprius.*

K, The *Buccinator* partly *in ſitu.*

L, The *Temporalis.*

M, The *Attollens Auriculam.*

N, The *Maſſeter.*

O, Part of the *Digaſtricus in ſitu.*

P, Part of the *Maſtoideus.*

Q, A Portion of the *Cucullaris.*

R, Part of the *Elevator Scapulæ in ſitu.*

SS, Parts of the *Muſculi Sterno-hyoidei.*

TT, Parts of the *Coracohyoidei.*

a, Part of the *Os Jugale.*

b b, The Cartilage of the *Auricula.*

(*d*) *c c*, *Glandula Parotis.* *d.* Its *Ductus Excretorius* paſſing over the *Muſculus Maſſeter.*

e e, A Branch of the Corotid Artery.

f, Part of the Lower Jaw-bone Bared

g, The *Glandula Maxillæ Inferioris.*

FIG.

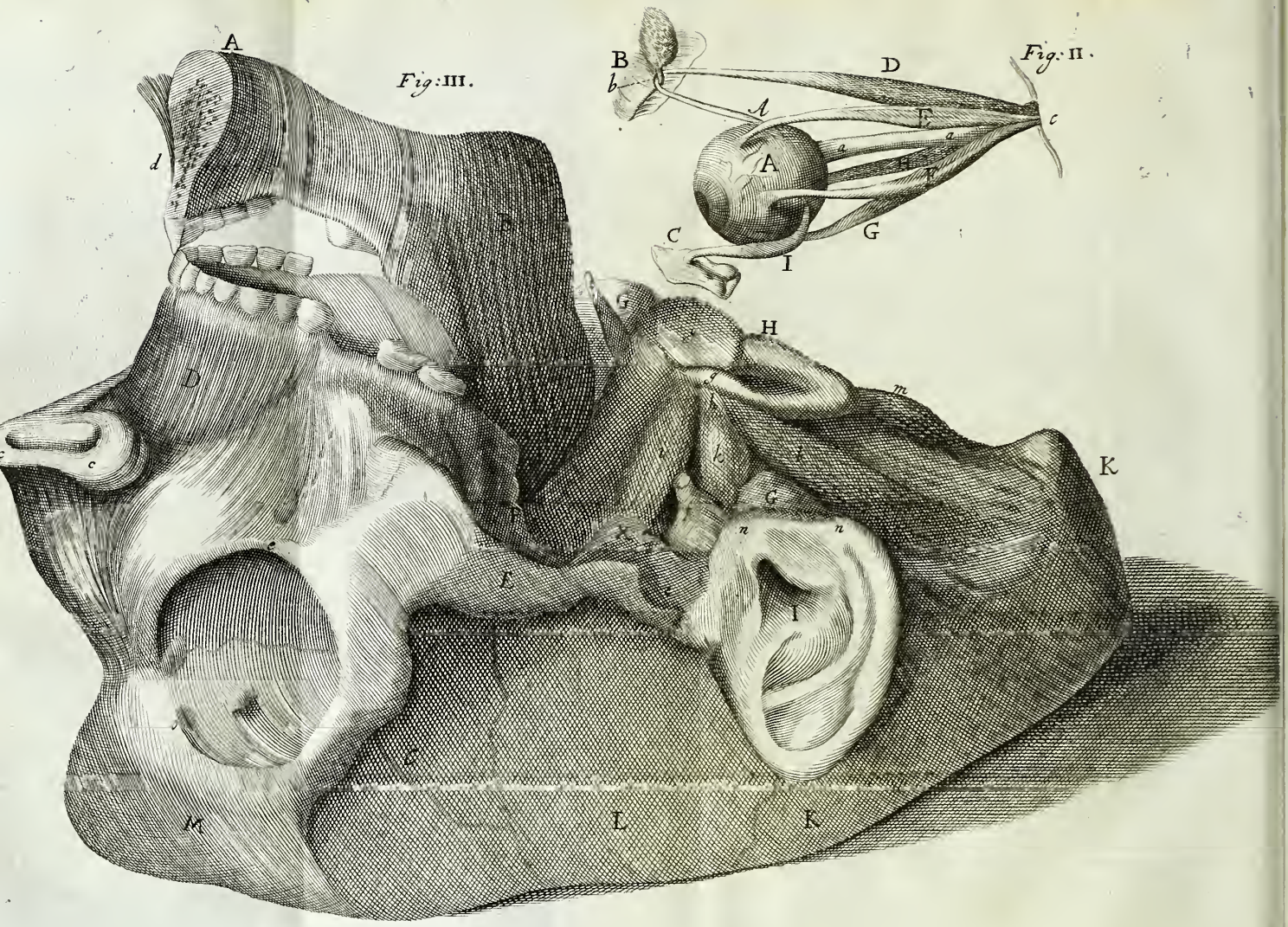


Fig. III.
A
d
B
D
c
c
G
H
K
I
L
M
Fig. II.
B
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a
c
H
K
C
I
G

FIG. II.

EXhibits the whole Eye, together with the Origination, Progreſs, and Inſertion of its Muſcles, when taken out of the *Orbit*.

AA, The *Tunica Sclerotis*, compoſing the External ſurface of the poſterior part of the *Bulb* of the Eye.

a a, The *Optick Nerve*.

B, A Portion of the ſuperior part of the Bone of the *Orbit* next the Noſe, to which the little Cartilage (*b*) call'd the *Trochlea b*... is fixt.

C, A Portion of the inferior and oppoſite part of the external Edge of the Bone of the *Orbit*, from whence the Oblique inferior Muſcle does Ariſe.

c, The Originations of the Four Right and ſuperior Oblique Muſcle of the Eye from the profoundeſt part of the *Orbit*.

D, The *Muſculus Obliquus ſuperior*, whoſe Tendon runs through the *Trochlea b*... to its Inſertion at the poſterior part of the Bulb of the Eye (*A*) behind the Termination of the following Muſcle.

E, Muſculus Attollens.
F, Abducens.
G, Deprimens.
H, Adducens.
I, Obliquus Inferior.

FIG. III.

SHews the *Baſis* of the *Cranium*, with the Muſcles that Ariſe from the Firſt *Vertebra* of the Neck, and are Inſerted to It, together with ſome of Thoſe imploy'd in the Motions of the Upper and Under Lip.

A, Half of the Inferior Jaw-bone on the Left ſide.

B, The *Muſculus Pterygoideus Internus in ſitu.*

C, Part of the *Os Sphenoides.*

c c, The *Ala Naſi.*

D, *Muſculus Depreſſor Labii ſuperioris proprius, ſeu Conſtrictor Alæ Naſi, in ſitu.*

d, Part of the *Elevator Labii Inferioris proprius* remaining at its Origin.

e, The Inferior part of the Brink of the *Orbit*, from whence the Inferior Oblique Muſcle (expreſt at I, *Fig.* II.) does Ariſe.

E, The

E, The *Os Jugale.*

P, The *Proceſſus Pterygoides*, or *Aliformis.*

ff, The *Proceſſus Styloides*, one of which is frequently Broken by the Rope after the common Execution of Malefactors, as it happened in this Subject on the Right ſide.

GG, The *Proceſſus Maſtoides* or *Mammiformes.*

H, The poſterior part of the Firſt
(*gg*) *Vertebra* of the Neck; *g g*, its Two Proceſſes that are Articulated with the Second *Vertebra.*

b, The Extremity of the Tranſverſe Proceſſes of the ſaid Firſt *Vertebra.*

i, The *Muſculus Annvans* or *Rectus minor anticus*, which I firſt obſerved in the year 1685.

k, The *Muſculus Abnvans Lateralis* or *Rectus Lateralis*, mentioned by *Falloppius.*

b, The *Obliquus ſuperior Capitis.*

m, The *Rectus minor poſticus.*

I, The Right Auricle or outward
(*nn*) Ear, *nn*, its *Lobus* Cut off.

KK, The *Os Occipitis.*

L, The *Os Squammoſum* or *Temporale.*

M, The *Os Frontis.*

o, That part of the *Orbit* to which the *Trochlea* adhereth.

FIG. IV.

REpreſenteth the Lower Jaw-bone, with the Proper Muſcles of the Under Lip remaining on it.

AA, The *Proceſſus Condyloides.*

BB, The Two other Proceſſes of the Lower Jaw called *Conone.*

CCC, Part of the Internal Membrane that Inveſts the Mouth.

DDEE, The Nerves and Bloud Veſſels paſſing out of the two Perforations in the Lower Jaw-bone to the Glandules and Muſcles of the Lips and Cheeks.

FF, The *Muſculi Elevatores Labii Inferioris proprii*, not hitherto deſcribed by any Author for what I know.

G G, The Internal ſurface of the *Muſculus Depreſſor Labii Inferioris Proprius.*

HH, The Glandules of the Cheeks.

I I, Part of the *Muſculus Spincter Labiorum.*

FIG.

Fig. IV.

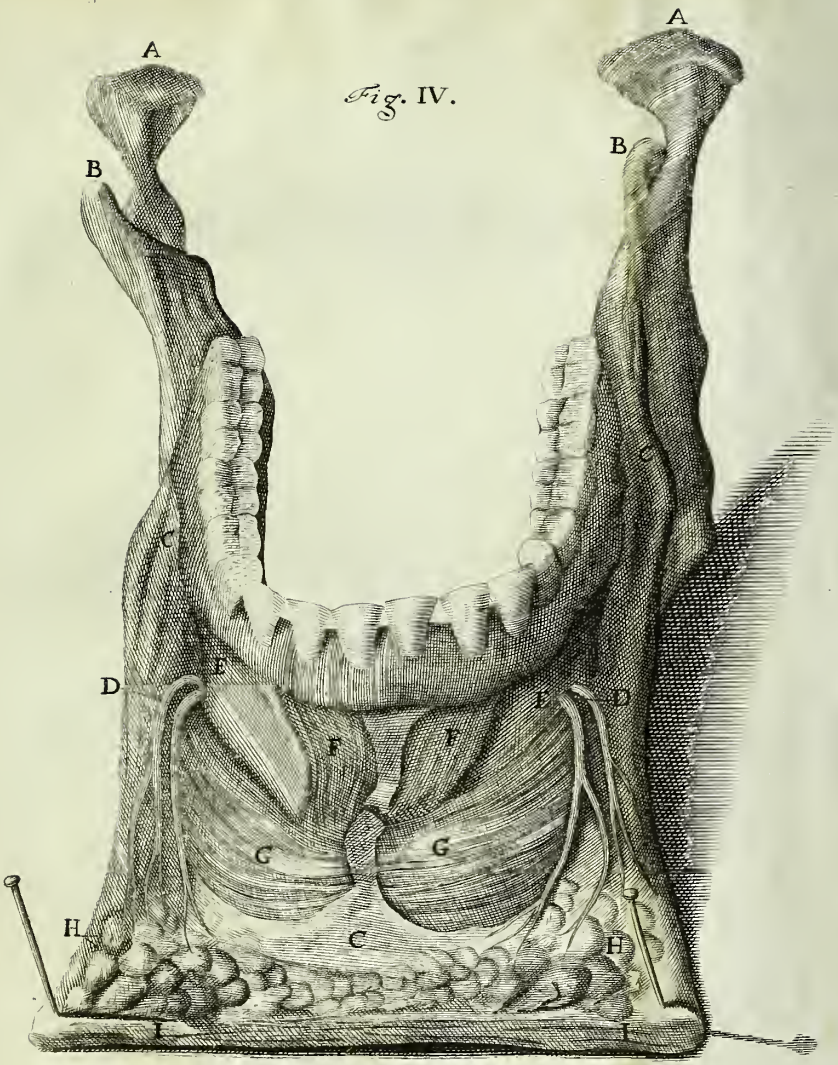

Fig. V.

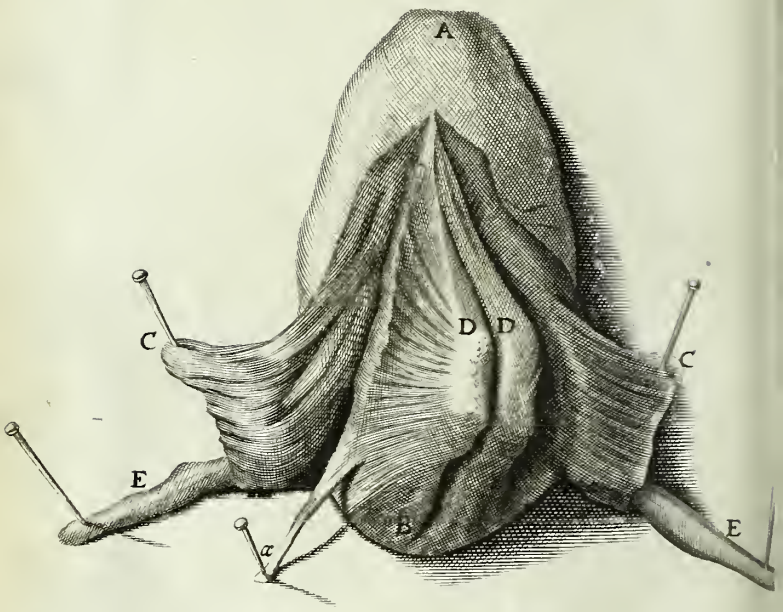

FIG. V.

SHews the Under side of the Tongue with its Muscles.

A, The *Apex* or Tip of the Tongue.

B, Its *Basis* or Root freed from the *Os Hyoides*.

CC, The *Musculi Ceratoglossi*.

DD, *Geniogloſſi*.

EE, *Styloglossi*.

a, A Branch of the Gustatory Nerve.

FIG. VI.

DEmonstrates the Back part of the Muscles of the *Fauces*.

AA, The *Musculi Stylopharyngei*.

BB, The *Pterygopharyngei*.

a a, The *Glandulæ Tonsillæ*.

CC, The *Musculus Oesophageus*.

b b, The

b b, The ſuperior part of the *Oeſophageus* raiſed to diſcover the progreſs of the *Stylopharyngeus* underneath it.

c, A Piece of the Long Proceſs of the Thyroidal Cartilage that is joined to the *Os Hyoides*.

D, The ſuperior part of the *Oeſophagus* or *Muſculus Vaginalis Gulæ*.

FIG. VII.

SHews the ſuperior part of the *Oeſophagus* or part of the *Muſculus Vaginalis Gulæ*.

AA, The Internal or Tranſverſe Fibres being continued from the *Oeſophageus* Muſcle.

BB, The Extetnal or Longitudeinal Fibres of the *Vaginalis Gulæ*.

FIG.

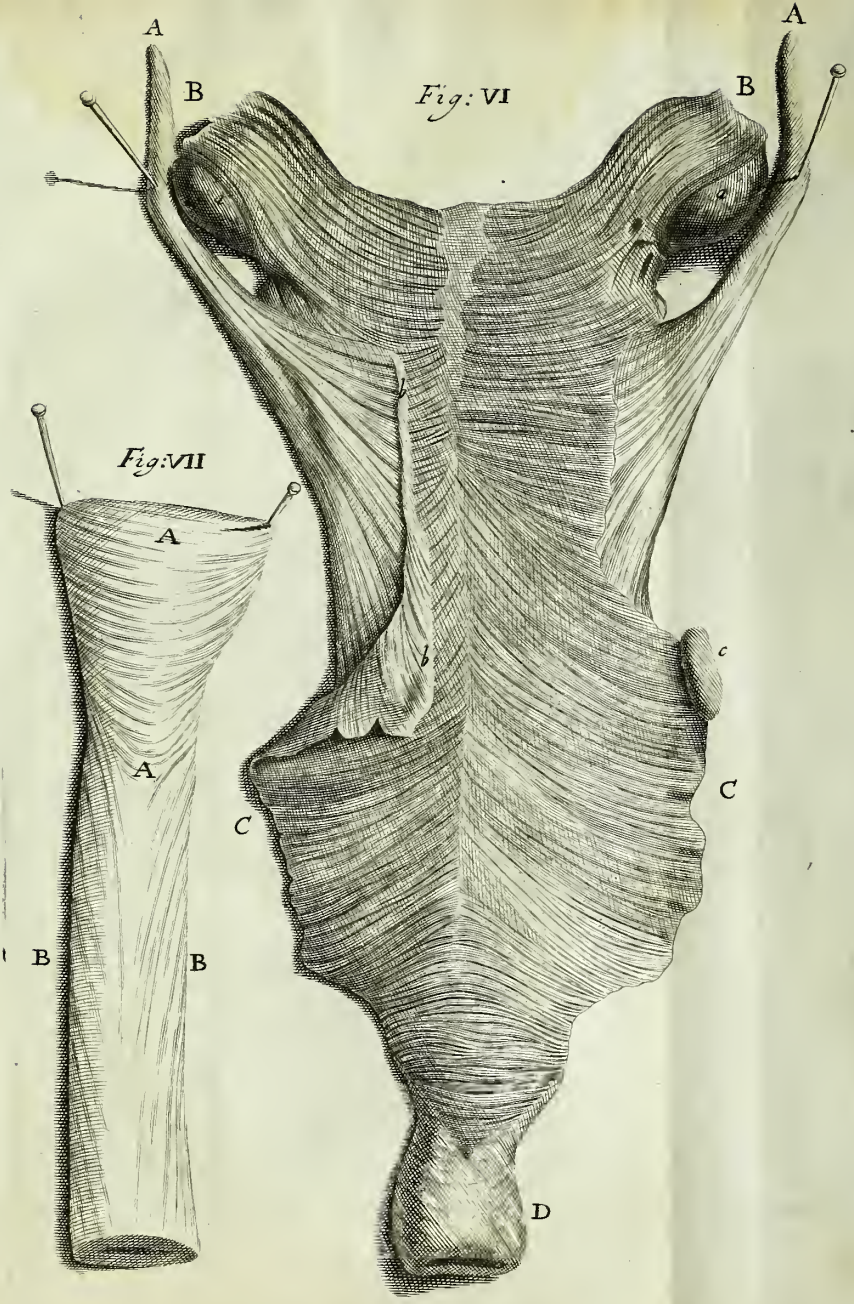
A
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Fig: VI
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b
b
c
C
C
Fig: VII
A
A
B
B
D

Fig: VIII

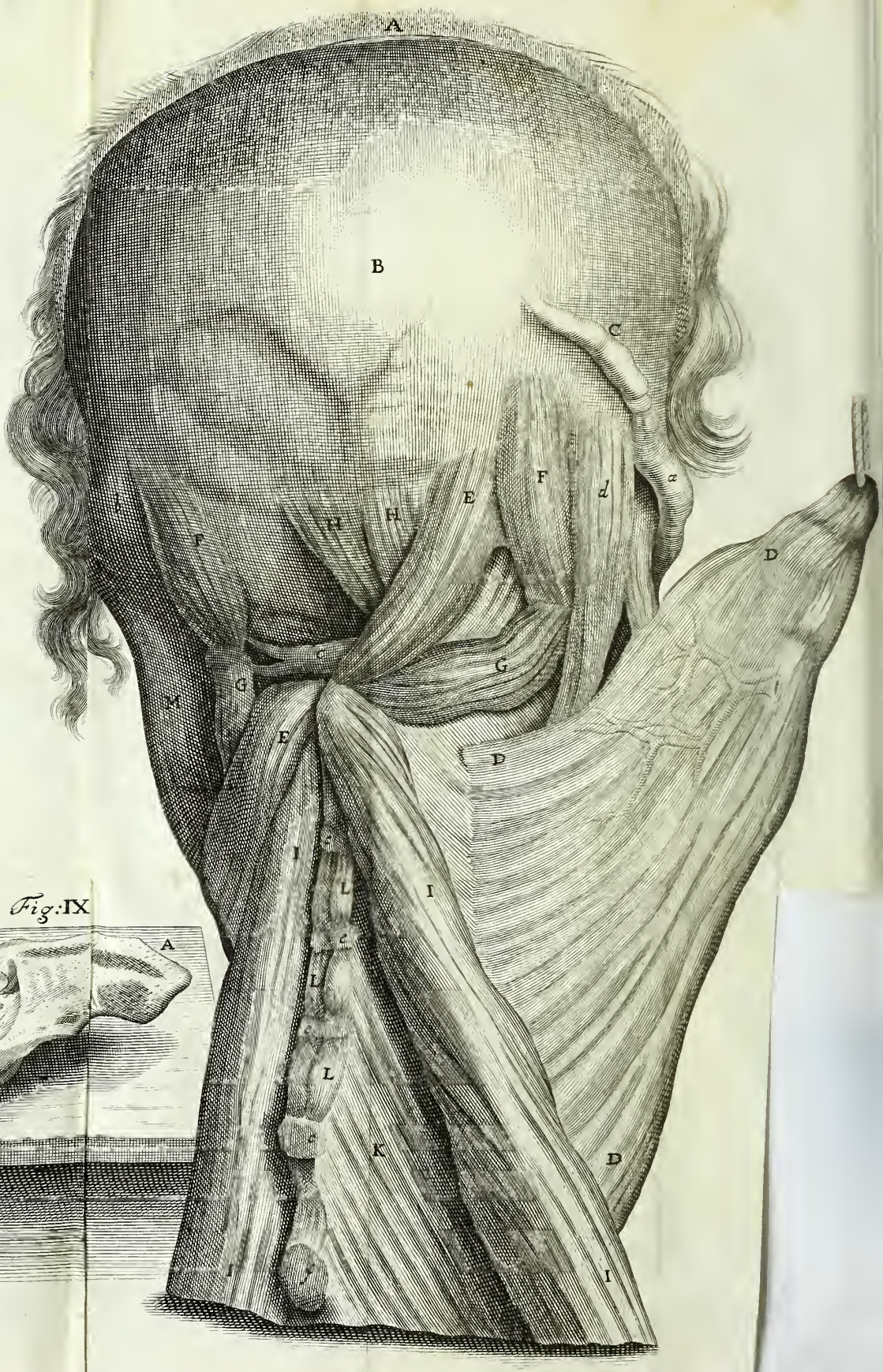

Fig: IX

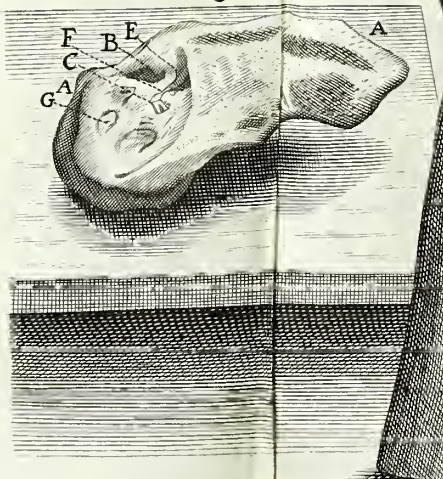

FIG. VIII.

REpreſents divers Muſcles of the Head and Neck.

A, The Hairy-ſcalp.

B, The *Os Occipitis*.

C, Part of the *Muſculus Splenius*.

DDD, The *Complexus* Raiſed from its Inſertion.

EE, The *Recti Majores* on the Right ſide *in ſitu*, on the Left depending.

FF, The *Obliqui ſuperiores*.

GG, The *Obliqui inferiores*.

HH, The *Recti Minores*.

æ, The *Os Jugale*.

b, The *Proceſſus Maſtoides*.

c, The Back-part of the Firſt *Vertebra* of the Neck.

d, Part of the *Muſculus Complexus* remaining *in ſitu*, which *Falloppius* makes a Diſtinct Muſcle, and reckons it with its Partner to be Third Pair of the Head.

III, The *Muſculi Spinales Colli*.

K, The *Tranſverſales Colli*.

LLL, The *Interſpinales Colli*.

eeee, The *Apices* of the Double Spines of the *Vertebræ* of the Neck.

f, The

f, The Extremity of the Spine of the Firſt *Vertebra* of the *Thorax*.

FIG. IX.

SHews part of the Organ of Hearing of a Calf.

AA, Part of the *Os Petroſum* divided.

B, The *Foramen Rotundum*.

C, The *Stapes* in its proper ſite on the *Foramen Ovale*.

E, The *Muſculus Stapidis*.

F, A ſmall Bone in the Tendon of the laſt named Muſcle as it paſſes over a Projection of the *Os Petroſum* which compoſeth the *Foramen Rotundum B*.

G, Part of the *Cochlea* broken up.

FIG.

FIG. X.

REpreſents the Fore-part of the Human *Penis* Prepared with *Mercury.*

AA, The Skin together with the reſt of the Common Integuments of the *Penis* freed from it.

aa, That part of Them which compoſeth the *Præputium.*

B, The Beginnings of the *Corpora Cavernoſa* ſeparated from the *Oſſa Pubis.*

(*cc*) *bb,* The Veins; *cc,* The Nerves,
(*dd*) *dd,* The Arteries, as they appear on the Back-part or *Dorſum Penis.*

C, The *Glans* or *Balanus.*

DD, The *Muſculi Erectores.*

EE, The *Tranſverſales.*

F, Part of the *Sphincter Ani.*

f, A Blow-Pipe Inſerted in the *Urethra.*

GG, The Trunks of the two Arteries of the *Penis* Cut from the Internal Branches of the *Iliac* Arteries:
(*gg*) *gg,* Their two Inferior Branches which
(*hh*) run to the *Muſculi Erectores*; *hh,* Their ſuperior Branches which adminiſter
(*ii*) Bloud to the adjacent Parts; *ii,* Thoſe Arteries

Arteries which pass to the *Bulb* of the Cavernous Body of the *Urethra*; *k k*, Their large Trunks which are subdivid-
(*dd*) ed again; the External of which *d d*, pass on the superior surface of the
(*ll*) *Penis*; the Internal *l l*, enter the *Corpora Cavernosa*.

HH, The Nerves of the *Penis*.

I, The *Vena ipsius Penis*.

KK, The *Venæ Præputii* which are joined with the Former.

LL, The *Lymphe-Ducts*.

FIG. XI.

SHews the Two *Corpora Cavernosa Penis*, and that of the *Urethra*, after a Transverse Section, when Inflated and Dry'd.

AA, The *Corpora Cavernosa Penis*.

B, The *Corpus Cavernosum Urethræ*.

C, The Trunk of the *Vena ipsius Penis*.

DD, The Trunks of the two *Arteries* passing through the *Corpora Cavernosa* of the *Penis*.

FIG. XII.

REpresents the Back-part of the Human *Penis.*

A, The *Balanus.*

a, The *Frenum.*

B, The External surface of the *Corpus Cavernosum Urethræ.*

CC, Its *Bulb* cover'd with the *Mus-*
(*b*) *culus Accelerator b*, The conjunction of its Right side with the Left, corresponding to the seam of the Skin in
(*cc*) the *Perinæum*; *c c* Its two extremities embracing the *Corpus Cavernosum Urethræ*, which terminate on the sides of the Cavernous Bodies of the *Penis* it self.

D, Part of the *Sphincter Ani.*

EE, The *Musculi Transversales Penis.*

FF, The *Directores* or *Erectores.*

GGGG, The *Corpora Cavernosa Penis.*

(*ddd*) *HH*, The Arteries *d d d*, Those Branches administring Bloud to the
(*ee*) Muscles; *e e* Two large Trunks of Them which are subdivided into Two
(*fg*) more *f g.*

I, I, The Nerves of the *Penis.*

FIG.

FIG. XIII.

SHews the Internal parts of the Extremities of the two Cavernous Bodies, and that of the *Glans Penis*.

A, The *Dorſum Penis*, covered with its *Capſula*.

B, The External part of the *Glans*.

a, Part of the *Septum* of the *Corpora Cavernoſa*.

b b, The Internal Membrane of the *Corpora Cavernoſa Penis* cover'd by the *Glans*.

C, The *Corpus Cavernoſum Glandis Penis*, on the Extremities of the *Corpora Cavernoſa Penis*.

FIG. XIV.

EXhibits the *Bulb* of the Cavernous Body of the *Urethra*, being Dried after Inflation.

A, The external part of the *Bulb* deveſted of the *Muſculus Accelerator Urinæ*.

B, Part of the *Bulb* raiſed after Section to ſhew its internal Cavernous Conſtructure.

a, The

a, The *Septum Bulbi.*
CC, The *Muſculi Tranſverſales.*

FIG. XV.

SHews part of one of the Cavernous Bodies of the *Penis*, being likewiſe dried after Inflation.

A, That part of the *Capſula* of the Cavernous Body next the *Os Pubis*, which is here compreſt by the Ligature made to retain the Wind.

B, The *Muſculus Erector Penis.*

C C, The Artery as it is diſtributed within the Cavernous Body of the *Penis* on either ſide.

FIG. XVI.

REpreſents the *Bulb* of a Dogs *Penis* after Inflation.

A, The external ſurface of the *Bulb*;

B, A Ligature made on a Vein that Ariſes from the ſuperior part of It, into which the Veins of the *Prepuce*

enter, and may therefore be called *Vena Præputii.*

CC, The large Trunk of one of the Veins of the *Penis* it ſelf, which in this Animal is double, Ariſing from each ſide the *Bulb.*

D, The internal appearance of the *Corpus Cavernoſum* of the *Bulb.*

EE, The Cavity of the Vein which communicates with the *Cavernulæ* of the *Bulb.*

FF, The *Corpus Cavernoſum Penis.*

FIG. XVII.

REpreſents the Fore-part of the Human *SCELETON.*

1, The *Os Sincipitis* or *Bregmatis.*

2, The *Os Frontis.*

3, The *Os Temporum* or *Squammoſum.*

4, The

4, The Two Bones of the Nose, either of which is reckoned the Fifth Bone of the Upper Jaw.

5, The Fourth Bone of the Upper Jaw.

6, The First Bone of the Upper Jaw.

7, The *Septum Narium.*

8, The *Processus Mastoides* or *Mammiformis.*

9... The *Os Jugale.*

10, 11, 12, The Lower Jaw-bone; 10, that part of it called the Chin; 11, its Posterior Process that is Articulated to the *Os Temporum,* called *Condyloides*; 12, The Anterior Process called *Corone.*

13, The Bodies of the Two Inferior *Vertebræ* of the Neck; *f g h,* Their Transverse Processes.

14, The *Clavicula.*

15, The *Spina Scapulæ.*

16, The *Processus Coracoides Scapulæ.*

17, The Short Process of the *Scapula.*

18, 19, 20, 21, 22, 23, The *Os Humeri,* or Shoulder Bone; 18, that Part of it where the *Deltoides* Muscle is Inserted; 19, Its Head that is Articulated with the Shoulder-blade;

20, the Asperity where the *Musculus subscapularis* is Inserted; 21, A *Sinus* in the Upper part of the Shoulder-bone that receives the External Tendinous Head of the *Musculus Biceps*; 22, The Internal Protuberance of the Lower part of the *Os Humeri*, whence the Two Flecting Muscles of the *Carpus*, *Pronator Radii Teres*, *Palmaris*, and *Musculus Perforatus* of the Fingers do Arise; 23, The External Protuberance of the last named Bone, whence the Muscles Extending the *Carpus* and Fingers do Arise.

24, 25, The *Radius*, 25, Its Prominence to which the Large Tendon of the *Musculus Biceps* is Inserted.

26, The *Ulna*.

27, The Eight Bones of the *Carpus*.

28, The Four Bones of the *Metacarpus*.

29, The Three Bones of the Thumb with their *Ossicula Sesamoidea*.

30, The Bones of the Fingers, Composed of Twelve Bones, of which, Three belongs to each Finger.

31, The Upper part of the *Os Pectoris* or *Sternum*.

32, The Lower part of the *Os Pectoris* or *Cartilago Ensiformis*, which is some

ſome times Bifid, as it appeared in the Subject from whence This Figure was Drawn.

33, 33, The *Vertebræ* of the Back or *Thorax.*

34, 34, The *Vertebræ* of the Loins.

i, k, l, m, n, o, p, q, r, ſ, t, u, The Twelve Ribs.

w, x, y, z, ✝, The Tranſverſe Proceſſes of the *Vertebræ* of the Loins.

35, The *Os Sacrum.*

36, 37, 38, 39, The *Os Innominatum,* tho' by ſome called *Coxendix*; 36, 37, That part of it called *Ilium*; 36, its Internal Concave part, and 37, its *Spine*; 38, the *Os Pubis* or *Pectinis*; 39, The *Os Iſchium,* where it is joined to the laſt named Bone.

40, 40, Shews the Great Sinuſſes of the *Oſſa Ilii,* and circumſcription of the *Pelvis Abdominis.*

41, The *Foramen* of the *Os Iſchium* and *Pubis.*

42, 43, 44, 45, 46, 47, The *Os Femoris* or Thigh-Bone: 43, Its Head which is received into the *Acetabulum* or *Cotyle* of the *Os Innominatum*: 44, Neck of the Thigh-bone: 45, The Great *Trocanter*: 46, The Leſſer *Trocanter,* where the *Muſculus Pſoas* and *Iliacus*

Internus are Inserted: 47, The lower and Internal Head of the Thigh-bone, to which the strong Tendon of the *Musculus Triceps* is Implanted.

48, The *Mola* or *Patella*, by some called *Rotula*.

49, 50, 51, The *Tibia*; 50, a Prominence on its upper part, where the Tendons of all the Extending Muscles of the Leg are Inserted; 51, The *Malleolus Internus*.

52, 53, 54, The *Fibula*; 53, 54, Its Superior and Inferior *Appendix*.

55, The *Os Astragali*.

56, The *Os Cymbiforme*.

57, The *Os Cuneiforme majus, seu Internum*.

58, The *Os Cuneiforme medium*.

59, The *Os Cuneiforme Externum*.

60, The *Os Cubiforme*.

61, Part of the *Os Calcis in situ*.

62, The Five Bones of the *Metatarsus*.

63, The Two Bones of the Great Toe.

64, The Twelve Bones of the Lesser Toes, of which Three compose each Toe.

****, *&c.* The *Appendices* of the *Spina Scapulæ, Os Humeri, Radius, Ulna, Os Femoris*, and *Tibia*.

FIG.

FIG. XVIII.

REpresents the Back, and Side of the *SCELETON.*

1, The *Os Sincipitis.*

2, The *Os Occipitis.*

3, The *Processus Mammiformis.*

4, The *Os Squammosum.*

5, Part of the *Os Sphenoides.*

6, The *Os Jugale.*

7, The First Bone of the Upper Jaw.

8, Part of the Fourth Bone of the Upper Jaw.

9, 10, The Lower Jaw-bone; 10, The Internal part of It, where the *Musculi Geniohyoidei* and *Genioglossi* do Arise.

11, Part of the *Clavicula.*

12, 13, 14, 15, 16, The *Scapula* or Shoulder-blade; 13, 13, Its *Basis*: From 13 to 14, Its *Costa Inferior*: 14, Its *Processus brevis*: 15, Part of the *Processus Coracoides* on the Left side, *in situ*; 16, *Spina Scapulæ.*

17, 18, 19, 20, 21, The *Os Humeri*; 17, That Part of It where the *Musculus Brachiæus Externus* begins to Arise; 18, Its Head; 19, The Aspe-

rity of the *Humerus*, where the *Musculi Supraspinatus*, *Infraspinatus*, and *Teres Minor*, are Inserted; 20, The External Protuberance; 21, The Internal Protuberance of this Bone.

22, The *Radius*.

23, 24, The *Ulna*; 24, Its superior part called the *Olecranum* or the Elbow.

25, The Eight Bones of the *Carpus*.

26, The Four Bones of the *Metacarpus*.

27, The Three Bones of the Thumb.

28, The Bones of the Fingers.

†, The First *Vertebra* of the Neck wanting a Spinal Process.

a, b, c, d, e, f, The Spinal Processes of the other Six *Vertebræ* of the Neck, of which the Five superior are Double, between whom are placed the *Musculi interspinales Colli*.

n, n, n, n, The Transverse Processes of the *Vertebræ* of the Neck.

h, i, k, l, m, n, o, p, q, r, s, t, The Twelve Ribs.

o o o, &c. The Transverse Processes of the *Vertebræ* of the *Thorax*; *PPP, &c.* Their Spines.

RRR, &c. The Spines of the Five *Vertebræ* of the Loins.

SSS, &c. The Tranſverſe Proceſſes of the ſaid *Vertebræ.*

u, w, x, y, z, The Bodies of thoſe *Vertebræ.*

29, The Back part of the *Os Ilium,* by ſome called *Dorſum Ilii.*

30, The Spine of the *Ilium.*

31, The Protuberance of the *Os Iſchium,* whence the Muſcles Bending the Leg do Ariſe, namely, the *Semi-nervoſus, Semimembranoſus,* and one of the Heads of the *Biceps*; and the *Quadratus Femoris.*

32, An Acute Proceſs of the *Os Iſchium,* between which and the laſt mentioned Protuberance 31, the Tendons of the *Muſculus Marſupialis* paſs, as on a Pully.

33, Part of the *Os Pubis.*

34, The *Os Sacrum.*

o, The *Os Coccygis.*

35, The large *Sinus* of the *Os Ilium,* wherein the *Muſculus Pyriformis* paſſes to its Termination.

36, The Great *Foramen* of the *Os Iſchium.*

37, 38, 39, 40, 41, 42, The *Os Femoris*; 37, The *Linea Aſpera*; 38, Its Head that is received in the *Acetabulum* of the *Coxendix*; 39, The Neck

of

of the Thigh-bone; 40, The *Trocanter major*, to which divers Muſcles are Inſerted; 41, The Leſſer *Trocanter*; 42, 42, The Two Inferior Protuberances of the Lower *Appendix* of this Bone.

43, Part of the *Patella in ſitu.*

44, 45, The *Tibiæ*; 44, that part of the Left, where the *Muſculus Sartorius, Gracilis,* and *Seminervoſus,* are Inſerted.

46, 47, 48, The *Fibula*; 47, 48, Its Superior and Inferior *Appendix.*

49, The *Os Calcis.*

50, The *Os Aſtragali.*

51, The *Os Cuboides.*

52, The three *Oſſa Cuneiformia.*

53, The *Os Cuneiforme majus.*

54, The *Os Cymbiforme.*

55, The *Oſſa Metatarſi.*

56, The Bones of the Toes.

***, *&c.* The *Appendices* of the *Spina Scapulæ, Os Humeri, Radius, Ulna, Oſſa Metacarpi, Os Ilium, Femoris,* and *Tibia.*

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A.

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ABductor Auris, vid. Retrahens Auriculam.
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I
Cowper
1694